

Chapter 14

Contracts and Water Rights

CalSim 3.0 uses annual contract amounts, contract allocations, and water rights as upper bounds on surface water diversions to agricultural, urban, and managed wetland demand units. At model run-time, these annual amounts are disaggregated to monthly limits on diversions according to the pattern of water demand. This chapter presents contract details for the Central Valley Project (CVP), State Water Project (SWP), and other (i.e., non-CVP) Reclamation projects. This chapter also discusses water rights associated with “non-project” surface water diversions from the Sacramento, Feather, and American Rivers. Flows in these rivers are strongly influenced by CVP and/or SWP operations, and the two projects have obligations to senior water right holders.

Central Valley Project

The CVP is the largest of the Federal Reclamation projects. It was originally authorized by the Rivers and Harbors Act of 1935 and reauthorized by the Rivers and Harbors Act of 1937. This second act stated that the dams and reservoirs of the CVP “shall be used, first, for river regulation, improvement of navigation and flood control; second, for irrigation and domestic uses; and, third, for power.” The CVP was reauthorized in 1992 through the Central Valley Project Improvement Act (CVPIA). The CVPIA modified the 1937 Act, adding mitigation, protection, and restoration of fish and wildlife as a project purpose. Further, the CVPIA specified that the dams and reservoirs of the CVP should now be used “first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and fish and wildlife mitigation, protection and restoration purposes; and, third, for power and fish and wildlife enhancement.”

Under the terms of its authorization, the CVP provides water to Sacramento River water right settlement contractors (settlement contractors) in the Sacramento Valley, San Joaquin River Exchange contractors (exchange contractors) and water right holders in the San Joaquin Valley, agricultural and municipal and industrial (M&I) water service contractors in both the Sacramento and San Joaquin valleys, and managed wetlands both north and south of the Delta. At the beginning of each calendar year, Reclamation evaluates hydrologic conditions to forecast CVP operations and to determine the amount of water to be made available to Federal water contractors for the contract year (March through February).

CVP Sacramento River Settlement Contracts

Sacramento River settlement contractors include individuals and districts who had established water rights on the Sacramento River before the construction of Shasta Dam. If these water rights were fully exercised, it would compromise the operation of the CVP and the project’s ability to make water available to its water service contractors. Thus, Congress directed Reclamation to negotiate settlement agreements. In 1964, Reclamation entered into long-term settlement contracts with senior water right holders, both districts and individuals, to divert certain natural

flows of the Sacramento River (base supply) and also provide a contractual entitlement to additional water supplies during the summer months from CVP yield (project water). The original term of these contracts was 40 years, and gave 146 settlement contractors the right to divert approximately 2.2 million acre-feet (MAF) from the Sacramento River in most years, and approximately 1.65 MAF during Shasta Lake “critical years.”¹

Reclamation renewed the majority of the settlement contracts in 2005, following the 2004 release of biological opinions (BO) issued by U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) for the long-term operation of the CVP and SWP.² Annual contract quantities range from 4 acre-feet to 825,000 acre-feet. The largest 20 settlement contracts account for approximately 95 percent of the total contracted amount. The contract renewals provide for continued diversions and delivery of water to the same lands and same purposes, with the exception of Natomas Central Mutual Water Company (MWC), which requested a change from agricultural to M&I water use in the Metro Air Park portion of its service area. A summary of CVP Sacramento River settlement contracts is presented in Table 14-1. Settlement contractors who hold contract amounts exceeding 10,000 acre-feet per year are highlighted in bold font.

There are two forms of settlement contract: standard form (also known as long-form) contract for districts, water companies, and municipalities; and short-form contract for individuals. However, individuals may also hold a standard form contract. The main difference between the two forms of contracts is the number of acres covered by the contract.

Under both forms of settlement contract, “base supply” is the quantity of water that Reclamation agrees may be diverted, without charge, from the Sacramento River each month from April through October. “Project water” refers to additional quantities of water that may be diverted from April to October, but are subject to pricing and other Federal requirements. Base supply and project water for each contractor are allocated on a monthly basis, as specified under Exhibit A of each contract. Base supply is scheduled during the months of April through October for all settlement contractors, with the exception of the City of Redding, whose water is scheduled year-round for M&I use. Additionally, July, August, and September are defined as critical months in all contracts, with the exceptions of Glenn-Colusa Irrigation District (ID), Anderson-Cottonwood ID, and the City of Redding. Critical months for these three contractors, because of their claims to senior water rights, are July and August only. Contract water (sum of base supply and project water) cannot be moved from non-critical months into critical months, but can be moved within critical months or from critical months into non-critical months.

¹ Settlement contracts are subject to reduction of contract amounts only in Shasta Lake “critical” years. Shasta Lake critical years are defined as years when the forecasted inflow to Shasta Lake is less than 3.2 MAF, or the total accumulated deficiencies below 4.0 MAF in the immediately prior water year, or series of successive prior water years (each of which had inflows of less than 4.0 MAF), together with the forecasted deficiency for the current water year, exceed 0.8 MAF. In these years, settlement contractors receive 75 percent of their full contract amount.

² The final EIS/EIR for renewal of the settlement contracts was issued in 2004, and the Record of Decision was signed in 2005.

Table 14-1. CVP Sacramento River Settlement Contracts

Central Valley Project Settlement Contractor	Contract		CalSim 3.0 Representation		Geographic Location			Contract Amount (acre-feet per year)		
	Number	Form	Demand Unit	Diversion Node	Contract River Mile	Adjusted River Mile ¹³	Size (acres)	Base	Project	Total
Water Budget Area 02: Sacramento River Right Bank, RM 254.1 – RM 309.5										
Redding, City of ¹	14-06-200-2871A	District	02_SU	SAC296	246.25	295.3		8,926	1,574	10,500
Subtotal										10,500
Anderson-Cottonwood ID ³	14-06-200-3346A	District	02_SA	SAC296	246.0	295.0		102,850	5,950	108,800
Lake California Property Owners As. Inc.	14-06-200-4961A	Short	02_SA	SAC296	221.0	269.4		580	200	780
Leviathan, Inc.	14-06-200-7308A	Short	02_SA	SAC296	221.0	269.4	160	355	345	700
Subtotal										110,280
Water Budget Area 03: Sacramento River Left Bank, RM 250.1 – RM 309.5										
Redding, City of ²	14-06-200-2871A	District	03_SU	SAC296	246.7	295.7		8,925	1,575	10,500
Subtotal										10,500
Anderson-Cottonwood ID ⁴	14-06-200-3346A	District	03_SA	SAC289	240.5	289.3		18,150	1,050	19,200
Riverview Golf and Country Club	14-60-200-8286A	Short	03_SA	SAC289	240.8	289.9	100	255	25	280
Daniell, Harry W.	14-06-200-4348A	Short	03_SA	SAC289	240.3	289.0	6	13	7	20
Redding Rancheria Tribe	7-07-20-W0006	Short	03_SA	SAC289	240.2	288.8	73	70	135	205
Driscoll Strawberry Associates, Inc.	14-06-200-4736A	Short	03_SA	SAC289	207.5	255.2	160	330	490	820
Subtotal										20,525
Water Budget Area 04: Sacramento River Right Bank, RM 206.1 – RM 254.1										
Meyer Crest Limited	14-06-200-8106A	Short	04_NA	SAC224	191.5	240.5		195	230	425
Exchange Bank (Nature Conservancy)	14-06-200-3774A	Short	04_NA	SAC224	168.85	219.5	320	210	570	780
Rubio, Exequiel P. and Elsa A.	14-06-200-2368A	Short	04_NA	SAC224	166.8	217.4	8	11	5	16
Penner, Roger & Leona	14-06-200-960A	Short	04_NA	SAC224	156.8	207.6	52	159	21	180
Freeman, Vola	2212A	Short	Not renewed	SAC224	156.1	207.2	8	0	0	0
Mclane, Robert and Naomi	4446A	Short	Not renewed	SAC224	155.6	206.5	13	0	0	0
Alexander, Thomas and Karen	14-06-200-7754A	Short	04_NA	SAC224	155.6	206.5	5	9	13	22
Subtotal										1,423
Water Budget Area 05: Sacramento River Left Bank, RM 195.7 – RM 250.1										
J. B. Unlimited, Inc.	14-06-200-2519A	Short	05_NA	SAC240	197.0	245.7	154	220	290	510
Micke, Daniel H. and Nina J.	14-06-200-7995A	Short	05_NA	SAC240	196.6	245.3	34	81	19	100
Gjermann, Hal	14-06-200-4010A	Short	05_NA	SAC240	196.55	245.0	5	8	4	12
Subtotal										622
Water Budget Area 08N: Sacramento River Right Bank, RM 153.7 – RM 206.1										
Princeton-Cordora-Glenn ID	14-06-200-849A	District	08N_SA1	SAC178	154.8, 123.9	178.0		52,810	15,000	67,810
Provident ID	14-06-200-856A	District	08N_SA1	SAC178	123.9	178.0		49,730	5,000	54,730
Maxwell ID ⁵	14-06-200-6078A	District	08N_SA1	SAC159	103.8, 104.1	159.6		599	300	899
Green Valley Corporation	14-06-200-5210A	Long	08N_SA1	SAC159	106.0	161.5	286	680	210	890
Green Valley Corporation	14-06-200-5211A	Short	08N_SA1	SAC159	106.0	161.5	184	555	325	880
Tuttle, Charles, Jr. and Noack, Sue T., Trustees	14-06-200-7296A	Short	08N_SA1	SAC159	103.9	159.6	140	120	270	390
Cachil Dehe Band of Wintun Indians	14-06-200-7206A	Short	08N_SA1	SAC159	103.7	159.4	23	80	100	180
Seaver, Charles W. and B.J., Trustees	14-06-200-3296A	Short	08N_SA1	SAC159	99.3	154.4	161	210	270	480
Subtotal										126,259
Glenn-Colusa ID ⁷	14-06-200-855A	District	08N_SA2	SAC207	154.8	206.6		396,000	57,750	453,750
Subtotal										453,750

Table 14-1. CVP Sacramento River Settlement Contracts (contd.)

Central Valley Project Settlement Contractor	Contract		CalSim 3.0 Representation		Geographic Location			Contract Amount (acre-feet per year)		
	Number	Form	Demand Unit	Diversion Node	Contract River Mile	Adjusted River Mile ¹³	Size (acres)	Base	Project	Total
Water Budget Area 08S: Sacramento River Right Bank, RM 92.8 – RM 153.7										
Maxwell ID ⁶	14-06-200-6078A	District	08S_SA1	SAC159	103.8, 104.1	159.6		11,381	5,700	17,081
Odysseus Farms Partnership	1664A	Long	Not renewed	SAC159	93.15	149.2	758	0	0	0
Roberts Ditch Irrigation Company, Inc.	14-06-200-935A	District	08S_SA1	SAC159	90.7	146.8		4,140	300	4,440
King, Benjamin and Laura	14-06-200-1086Y	Short	08S_SA1	SAC159	89.2	144.7	5	12	7	19
King, Laura	14-06-200-1086Z	Short	08S_SA1	SAC159	89.2	144.7	6	13	13	26
Wisler, John W., Jr.	14-06-200-5215A	Short	08S_SA1	SAC159	88.0	144.6	18	8	27	35
Mehrhof Montgomery, S and J McPherson Montgomery	14-06-200-2145A	Short	08S_SA1	SAC159	87.7	144.0	65	164	16	180
Steidlmayer, Anthony E. et al.	874A	Short	Not renewed	SAC159	83.0	139.0	168	0	0	0
Sycamore Family Trust	14-06-200-2146A	Long	08S_SA1	SAC159	77.8, 78.15, 78.75, 78.8	135.5		22,000	9,800	31,800
Subtotal										53,581
Glenn-Colusa ID ⁸	14-06-200-855A	District	08S_SA2	SAC207	154.8	206.6		324,000	47,250	371,250
Subtotal										371,250
Jansen, Peter and Sandy	14-06-200-1426A	Short	08S_SA3	SAC121	70.4	128.1	61	150	40	190
Gillaspay, William F., Trustee	14-06-200-8117A	Short	08S_SA3	SAC121	70.4	128.1	64	120	90	210
Beckley, Ralph and Ophelia	14-06-200-8118A	Short	08S_SA3	SAC121	70.4	128.1	92	165	135	300
Driver, Gary, et al.	14-06-200-8585A	Short	08S_SA3	SAC121	69.2	127.0	10	8	22	30
Reclamation District 108	14-06-200-876A	District	08S_SA3	SAC121	43.1, 43.3, 51.1, 56.4, 59.15, 61.05 61.2, 62.3, 63.2, 70.4	120.9		199,000	33,000	232,000
River Garden Farms Company	14-06-200-878A	Long	08S_SA3	SAC109	34.5, 41.0, 43.1	101.5		29,300	500	29,800
Driver, John A. & Clare M., Trustees	14-06-200-1314A	Short	08S_SA3	SAC109	36.45	95.2	84	150	80	230
Driver, John A. & Clare M., Trustees	14-06-200-2398A	Short	08S_SA3	SAC109	36.45	95.2	6	6	10	16
Subtotal										262,776
Water Budget Area 09: Sacramento River Left Bank, RM 140.6 – RM 195.7										
Pacific Realty Associates, L.P. (M&T Chico Ranch)	14-06-200-940A	Long	09_SA1	SAC196	140.8, 141.5	195.6		16,980	976	17,956
Subtotal										17,956
Reclamation District 1004	14-06-200-890A	District	09_SA2	SAC162	84.28, 85.3, 89.12, 111.8	164.8		56,400	15,000	71,400
Spence, Ruthann (Spence Farms)	4829A	Long	Not renewed	SAC162	104.8	160.4	209	0	0	0
Anderson, Arthur L. et al.	14-06-200-3591A	Short	09_SA2	SAC162	102.5	158.1	200	445	45	490
Carter Mutual Water Company	14-06-200-2401A	District	09_SA2	SAC162	99.25, 101.8, 102.9	158.1		6,450	672	7,122
Forry, Laurie and Adams, Louise	14-06-200-7691A	Long	09_SA2	SAC162	99.8	154.8	506	2,285	0	2,285
Otterson, Mike, Trustee	14-06-200-2896A	Long	09_SA2	SAC162	98.9	154.7	422	1,515	300	1,815
Nene Ranch, LLC	14-06-200-2993A	Long	09_SA2	SAC162	98.6	153.7	409	1,360	200	1,560
Griffin, Joseph and Prater, Sharon	14-06-200-2895A	Long	09_SA2	SAC162	95.8	151.3	552	1,610	1,150	2,760
Baber, Jack W. et al.	14-06-200-1604A	Long	09_SA2	SAC162	95.6	151.1	1,068	3,630	2,630	6,260
Eastside Mutual Water Company	14-06-200-1053A	District	09_SA2	SAC162	95.25	150.8	1,006	2,170	634	2,804
Zelmar Ranch, Inc.	14-06-200-1827A	Short	09_SA2	SAC162	92.5	148.7	120	112	52	164
Gomes, Judith A., Trustee	14-06-200-1827X	Short	09_SA2	SAC162	92.5	149.7	72	168	78	246

Table 14-1. CVP Sacramento River Settlement Contracts (contd.)

Central Valley Project Settlement Contractor	Contract		CalSim 3.0 Representation		Geographic Location			Contract Amount (acre-feet per year)		
	Number	Form	Demand Unit	Diversion Node	Contract River Mile	Adjusted River Mile ¹³	Size (acres)	Base	Project	Total
Butte Creek Farms, Inc.	14-06-200-2851A	Short	09_SA2	SAC162	89.26	145.7	17	20	16	36
Butte Creek Farms, Inc.	14-06-200-5206A	Short	09_SA2	SAC162	89.24	145.6	36	40	55	95
Butte Creek Farms, Inc.	14-06-200-1976A	Short	09_SA2	SAC162	88.7	145.2	114	196	8	204
Butte Creek Farms, Inc.	14-06-200-7744X	Short	09_SA2	SAC162	88.7	145.2	180	300	340	640
Howard, Theodore W. and Linda M.	14-06-200-1976X	Short	09_SA2	SAC162	88.7	145.2	31	74	2	76
Locvich, Loyd	1945A	Short	Not renewed	SAC162	88.2	144.7	160	0	0	0
Ehrke, Allen A. and Bonnie E.	14-06-200-8330A	Short	09_SA2	SAC162	86.8	143.3	165	220	160	380
Subtotal										98,337
Water Budget Area 18: Sacramento River Left Bank, RM 121.8 – RM 140.6										
Fedora, Sibley G. and Margaret L., Trustees	14-60-200-2916A	Short	18_SA	SAC136	82.7	139.3	86	190	20	210
Reische, Laverne C. et al.	14-06-200-1150A	Short	18_SA	SAC136	82.5	139.1	104	183	267	450
Reische, Eric L.	14-06-200-1150X	Short	18_SA	SAC136	82.5	139.1	18	37	53	90
Tarke, Stephen E. and D.F., Trustees	14-06-200-1949A	Long	18_SA	SAC136	81.5	138.1	492	1,700	1,000	2,700
Meridian Farms Water Company	14-06-200-838A	District	18_SA	SAC136	71.1, 74.8, 80.0	136.5		23,000	12,000	35,000
Churkin, Michael Jr. et al.	14-06-200-7227A	Short	18_SA	SAC136	79.5	135.8	49	75	55	130
Eggleston, Ronald H. et ux.	14-06-200-7339A	Short	18_SA	SAC136	79.0	135.3	28	53	12	65
Hale, Judith A. and Marks, Alice K.	14-06-200-7572A	Short	18_SA	SAC136	79.0	135.3	54	117	13	130
Hale, Judith A. and Marks, Alice K.	14-06-200-1638A	Short	18_SA	SAC136	79.0	135.3	31	58	17	75
Pires, Lawrence and Beverly	7744A	Short	Not renewed	SAC136	77.9	134.6	111	0	0	0
Davis, Ina M.	14-06-200-1851A	Short	18_SA	SAC136	76.2	132.5	34	71	14	85
Chesney, Adona, Trustee	14-06-200-930A	Short	18_SA	SAC136	76.15	132.5	149	310	390	700
Andreotti, Beverly F. et al.	14-06-200-1898A	Long	18_SA	SAC136	72.1	128.8	462	2,060	1,560	3,620
McLaughlin, Jack E. and Margery L.	2514A	Short	Not renewed	SAC136	72.0	128.7	142	0	0	0
Lomo Cold Storage and Micheli, Justin J.	14-06-200-931A	Long	18_SA	SAC136	67.5	125.1		6,410	700	7,110
Anderson R. and J., Properties, LP	14-06-200-1726A	Short	18_SA	SAC136	67.1	124.7	95	149	88	237
Lonon, Michael E.	14-06-200-8658A	Short	18_SA	SAC136	67.1	124.7	260	715	440	1,155
Tisdale Irrigation and Drainage Company	14-06-200-2781A	District	18_SA	SAC136	64.4, 67.1	124.3		7,900	2,000	9,900
Sutter MWC⁹	14-06-200-815A	District	18_SA	SAC136	63.75	121.2		10,170	3,390	13,560
Subtotal										75,217
Water Budget Area 19: Sacramento River Left Bank, RM 87.5 – RM 121.8										
Oji Brothers Farm, Inc.	14-06-200-3753A	Long	19_SA	SAC122	63.9	121.3		1,340	1,860	3,200
Sutter MWC¹⁰	14-06-200-815A	District	19_SA	SAC091, SAC099, SAC122	32.4, 40.6, 63.75	121.2		159,330	53,110	212,440
Young, Russell L., et al.	14-06-200-2552A	Short	19_SA	SAC122	63.3	121.1	4	2	8	10
Sekhon, Arjinderpal and Daljit	W0001	Short	Not renewed	SAC115	62.3	119.8	155	0	0	0
Butler, Dianne E., Trust	14-06-200-2365A	Short	19_SA	SAC115	60.5, 61.8	119.4	142	180	280	434
Hatfield Robert and Bonnie	14-06-200-1042A	Short	19_SA	SAC115						26
Howald Farms, Inc.	14-06-200-2520A	Long	19_SA	SAC115	60.4	118.9	512	1,350	1,410	2,760
Kary, Carol Trustee	14-06-200-5200A	Short	19_SA	SAC115	59.8	117.4	280	400	600	1,000
Wilson, Dennis, Farms, Inc.	14-06-200-4105A	Short	19_SA	SAC115	58.9	116.7	80	295	60	355
Lockett, William P. and Jean B.	14-06-200-4105X	Short	19_SA	SAC115	58.3	116.8	490	370	47	417
O'Brien, Frank J., and Janice C.	14-06-200-2486A	Long	19_SA	SAC115	58.3	116.0	290	550	289	839
Dyer, Jeffrey E., and Wing-Dyer, Jan	14-06-200-2073A	Short	19_SA	SAC115	57.75	115.6	120	180	340	520
Pelger Mutual Water Company	14-06-200-1286A	District	19_SA	SAC115	56.96	114.8		7,110	1,750	8,860

CalSim 3.0 Hydrology Development Project

Central Valley Project Settlement Contractor	Contract		CalSim 3.0 Representation		Geographic Location			Contract Amount (acre-feet per year)		
	Number	Form	Demand Unit	Diversion Node	Contract River Mile	Adjusted River Mile ¹³	Size (acres)	Base	Project	Total
Bardis, Cristo D. et al.	14-06-200-815A	Long	19_SA	SAC109	55.1	112.8	2,055	8,070	2,000	10,070
Wakida, Haruye, Trustee	14-06-200-1415A	Short	19_SA	SAC109			164	50	275	325
Wakida, Haruye, Trustee	14-06-200-5200X	Short	19_SA	SAC109	52.3	110.3	80	25	135	160
Nelson, Thomas L., Jr., and Hazel H.	14-06-200-1954A	Short	19_SA	SAC109	52.0	110.0	43	38	98	136
Rauf, Abdul and Tahmina	8-07-20-W0117	Long	19_SA	SAC109	50.0	108.0	483	2,450	710	3,160
Hiatt, Thomas, Trustee	14-06-200-880A	Long	19_SA	SAC109	49.0, 49.7	107.5	375	947	538	1,485
Hiatt, Thomas, and Illerich, Phillip, Trustees	14-06-200-880X	Long	19_SA	SAC109	49.0	106.8		372	212	584
Oji, Mitsue, Family Partnership et al.	14-06-200-2427A	Long	19_SA	SAC109	48.7	106.8		3,430	1,310	4,740
Henle, Thomas N., Trustee	14-06-200-932A	Long	19_SA	SAC109	46.5	105.6	393	935	0	935
Windswept Land and Livestock Company	14-06-200-2045A	Long	19_SA	SAC109	44.2, 45.6, 46.45	105.1	738	4,040	0	4,040
Schreiner (Sioux Creek Property LLC)	14-06-200-889A	Short	19_SA	SAC099	38.8	97.3	112	180	20	200
Munson, James T. and Delmira	14-06-200-7049A	Short	19_SA	SAC099	37.75	96.4	78	70	85	155
KLSY LLC	14-06-200-7556A	Short	19_SA	SAC099	37.2	95.8	63	80	90	170
Quad-H Ranches, Inc.	14-06-200-2153A	Short	19_SA	SAC099	36.2	94.9	74	190	310	500
Giusti, Richard J. and Sandra A., Trustees	14-06-200-4076A	Short	19_SA	SAC099	36.2	95.0	304	850	760	1,610
Drew, Jerry	2250A	Short	Not renewed	SAC099	35.85	94.4	9	0	0	0
Jaeger, William L. and Patricia A.	7-07-20-W0002	Short	19_SA	SAC091	Sutter Bypass		112	385	485	870
Morehead, Joseph A., and Brenda	14-06-200-5789A	Short	19_SA	SAC091	Sutter Bypass		48	115	140	255
Heidrick, Joe Jr., Trustee	14-06-200-1176A	Short	19_SA	SAC091	33.75	92.4	72	360	200	560
Leiser, Dorothy L.	14-06-200-4178A	Short	19_SA	SAC091	33.75	92.4	14	36	24	60
MCM Properties, Inc.	14-06-200-7827A	Long	19_SA	SAC091	33.75	91.8	201	860	610	1,470
Richter, Henry D. et al.	14-06-200-4362A	Long	19_SA	SAC091	33.2	92.0	583	1,750	1,030	2,780
Furlan, Emile and Simone, Family Trust	14-06-200-1175A	Short	19_SA	SAC091	32.5	90.9	195	23	30	53
Wallace, Kenneth L. Living Trust	14-06-200-1175A-X	Short	19_SA	SAC091	32.5, 33.2	91.6	195	547	320	867
Byrd, Anna C., and Osborne, Jane ¹²	14-06-200-1595A	Long	19_SA	SAC091	26.8, 30.5	89.6	316	1,065	200	1,265
Subtotal										267,311
Water Budget Area 21: Sacramento River Right Bank, RM 62.1 – RM 92.8										
Edson, Wallace L. and Mary O.	906A	Short	Not renewed	SAC083	33.85	92.5	25	0	0	0
Driver, William A., et al.	14-06-200-939A-1	Short	21_SA	SAC083	32.5	91.2	82	54	106	160
Driver, Gregory E.	14-06-200-939A-2	Short	21_SA	SAC083	32.5	91.2	80	6	14	20
Giovannetti, B.E.	14-06-200-991A	Short	21_SA	SAC083	31.5	90.5	150	470	50	520
Heidrick, Mildred M., Trustee	14-06-200-1616A	Short	21_SA	SAC083	30.6	89.5	42	86	34	120
Knights Landing Investors, LLC	14-06-200-4604A	Long	21_SA	SAC083	32.1, 30.7, 29.7	88.6	820	2,680	960	3,640
Heidrick, Mildred M., Trustee	14-06-200-8322A	Short	21_SA	SAC083	29.2, 30.3	89.6	204	370	60	430
Hershey Land Company	7972A	Long	Not renewed	SAC083	28.1	87.2	727	0	0	0
Sacramento River Ranch LLC	14-06-200-2149A	Long	21_SA	SAC083	16.6, 17.0, 22.5	84.5		4,000	0	4,000
Knaggs Walnut Ranches Company, L.P.	14-06-200-2148A	Long	21_SA	SAC083	16.1	78.1		630	0	630
Conaway Preservation Group	14-06-200-7422A	Long	21_SA	SAC074	12.0	73.6		50,190	672	50,862
Wilson Ranch Partnership	14-06-200-4520A	Long	21_SA	SAC074	11.1	72.9		370	0	370
Reclamation District 900 and 1000	14-06-200-1779A	Short	21_SA	SAC074	9.35	71.1	142	281	123	404
Mesquite Investors, LLC (Riverby Limited)	14-06-200-934A	Short	21_SA	SAC074	5.25	66.9	177	470	30	500
Subtotal										61,656

Table 14-1. CVP Sacramento River Settlement Contracts (contd.)

Central Valley Project Settlement Contractor	Contract		CalSim 3.0 Representation		Geographic Location			Contract Amount (acre-feet per year)		
	Number	Form	Demand Unit	Diversion Node	Contract River Mile	Adjusted River Mile ¹³	Size (acres)	Base	Project	Total
Water Budget Area 17: Sacramento River Left Bank, RM 82.7 – RM 87.5										
Byrd, Anna C., and Osborne, Jane ¹²	14-06-200-1595A	Long								
Subtotal										0
Water Budget Area 22: Sacramento River Left Bank, RM 64.9 – RM 82.7										
Pleasant Grove-Verona MWC ¹¹	14-06-200-5520A	District	22_SA1	SAC082	19.6	81.7		23,790	2,500	26,290
Natomas Central MWC ¹¹	14-06-200-885A	Long	22_SA1	SAC082	2.15,6.1,7.5, 4.1,16.0,19.6	81.5		98,200	22,000	120,200
Odysseus Farms Partnership	14-06-200-8574A	Short	22_SA1	SAC076	19.6	81.7	121	220	410	630
Cummings, William C.	7-07-20-W0054	Short	22_SA1	SAC076	18.7	81.0	130	180	120	300
Lauppe, Burton H., and Kathryn L.	14-06-200-1289A	Short	22_SA1	SAC076	18.45	80.6	264	720	230	950
Natomas Basin Conservancy	14-06-200-1364A	Short	22_SA1	SAC076	18.2	80.2	271	221	269	490
E.L.H. Sutter Properties Inc.	14-06-200-1364Y	Short	22_SA1	SAC076	18.2	80.2	12	6	14	20
Lauppe, Burton H., and Kathryn L.	14-06-200-1364X	Short	22_SA1	SAC076	18.2	80.2	110	153	197	350
Siddiqui, Javed and Amna	2065A	Short	Not renewed	SAC076	10.75	72.5	88	0	0	0
Wiley, Edwin E. and Marjorie E.	14-06-200-3556A	Short	22_SA1	SAC076	10.75	72.5	46	75	20	95
Siddiqui, Javed and Amna	7941A	Long	Not renewed	SAC076	10.25	71.8	280	0	0	0
Sacramento, County of	14-06-200-2404A	Short	22_SA1	SAC076	9.3	71.2	250	520	230	750
Subtotal										150,075
Total								1,760,723	331,295	2,092,018

Source: http://www.usbr.gov/mp/cvpia/3404c/lt_contracts/2005_exec_cts_sac_river/index.html, Patricia Stewart, personal communication, November 28, 2011.

Notes:

- ¹ Contract for City of Redding estimated as 50% of 21,000 acre-feet based on Census 2000 population located within Foothill, Hill 900 and Cascade pressure zones.
- ² Contract for City of Redding estimated as 50% of 21,000 acre-feet based on Census 2000 population located within Enterprise Zone.
- ³ Contract for Anderson-Cottonwood ID estimated as 85% of 125,000 acre-feet based on historical delivery data. Additional 85% of 3,000 acre-feet water rights.
- ⁴ Contract for Anderson-Cottonwood ID estimated as 15% of 125,000 acre-feet based on historical delivery data. Additional 15% of 3,000 acre-feet water rights.
- ⁵ Contract for Maxwell ID estimated as 5% of 18,000 acre-feet based on GIS land-use surveys of cropped area.
- ⁶ Contract for Maxwell ID estimated as 95% of 18,000 acre-feet based on GIS land-use surveys of cropped area.
- ⁷ Contract for Glenn-Colusa ID estimated as 55% of 825,000 acre-feet based on GIS land-use surveys of cropped area.
- ⁸ Contract for Glenn-Colusa ID estimated as 45% of 825,000 acre-feet based on GIS land-use surveys of cropped area.
- ⁹ Contract for Sutter MWC estimated as 94% of 226,000 acre-feet based on GIS land-use surveys of cropped area. Diversion from Tisdale Pumping Plant.
- ¹⁰ Contract for Sutter MWC estimated as 6% of 226,000 acre-feet based on GIS land-use surveys of cropped area.
- ¹¹ Pleasant Grove-Verona MWC and Natomas Central MWC also divert water from the Natomas Cross Canal.
- ¹² Contractor located in WBA 17S and WBA 19. For modeling purposes, land assumed to be located in WBA 19
- ¹³ CalSim 3.0 river mile refers to most upstream diversion point. RM 61.7 corresponds to the I Street Bridge in the City of Sacramento. This is RM 0.0 for Reclamation Contract river miles.

Key:

CVP = Central Valley Project
 GIS = geographical information system,
 ID = Irrigation District
 LLC = Limited Liability Company
 LP = Limited Partnership
 MWC = Mutual Water Company
 RM = river mile
 WBA = Water Budget Area

CVP Municipal and Industrial and Agricultural Water Service Contracts

CVP water service contracts are agreements between Reclamation and water districts and water agencies for the purchase of CVP project water. Reclamation signed its first water service contracts in 1964. Most of these contracts were for the delivery of project water for a 40-year period. Many of the water service contracts were renewed in 2005, following completion of environmental documentation^{3,4} associated with the 2004 Operations Criteria and Plan (OCAP). Table 14-2 presents CVP contract amounts for water service contractors located in the Sacramento Valley.

Table 14-2. CVP Water Service Contracts for Service Areas North of Delta

Central Valley Project Water Service Contractor	Contract Number	CalSim 3.0 Representation		Contract (acre-feet per year)	
		Demand Unit	Diversion Node	Irrigation	M&I
Sacramento and Trinity River Divisions ⁴					
Clear Creek CSD	489-A	02_PA	WKYTN	7,300 ¹	-
Centerville CSD	14-06-200-3367X	02_PU	WKYTN	-	3,800 ³
Clear Creek CSD	14-06-200-489-A		WKYTN	-	8,000 ¹
Shasta CSD	14-06-200-862A		WKYTN	-	1,000
Shasta County WA	14-06-200-3367A		WKYTN	-	332 ²
Keswick CSA	N/A		WKYTN	-	400 ²
Bella Vista WD	14-06-200-851A	03_PA	SAC294	18,000 ⁸	-
Bella Vista WD	14-06-200-851A	03_PU2	SAC294	-	6,578 ⁸
City of Shasta Lake	4-07-20-W1134	03_PU1	SHSTA	-	4,400
Mountain Gate CSD	14-06-200-6998		SHSTA	-	1,350
Jones Valley CSA	N/A		SHSTA	-	290 ²
Redding, City of (Buckeye WTP)	14-06-200-5272A	03_PU3	WKYTN	-	6,140
Subtotal				29,420	28,170
Corning Canal Unit					
Corning WD	14-06-200-6575	04_PA1	CCL005	23,000	-
Proberta WD	14-06-200-7311			3,500	-
Thomes Creek WD	14-06-200-5271A			6,400	-
Subtotal				32,900	0
Tehama-Colusa Canal Unit					
Kirkwood WD	7-07-20-W0056	04_PA2	TCC022	2,100	-
Glide WD	W0040	07N_PA	TCC036	10,500	-
Kanawha WD	466-A			45,000	-
Orland-Artois WD	14-06-200-8382A			53,000	-
Colusa, County of					

³ Formal and Early Section 7 Endangered Species Consultation on the Coordinated Operations of the Central Valley Project and State Water Project and the Operational Criteria and Plan. Biological Opinion on the effects of the action to the threatened delta smelt and its critical habitat (USFWS, 2004).

⁴ Biological Opinion on the effects of the long-term Central Valley Project Operation Criteria and Plan on Central Valley spring-run Chinook salmon and Central Valley steelhead (NMFS, 2004).

Table 14-2. CVP Water Service Contracts for Service Areas North of Delta (contd.)

Central Valley Project Water Service Contractor	Contract Number	CalSim 3.0 Representation		Contract (acre-feet per year)			
		Demand Unit	Diversión Node	Irrigation	M&I		
Holthouse WD (65%) (assigned)	1-07-20-W0224	07S_PA	TCC081 TCC111	1,593	-		
Colusa, County of	14-06-200-8310A			10	-		
4-M WD (assigned)	0-07-20-W0183			5,700	-		
Colusa County WD (assigned)	1-07-20-W0220			5,964	-		
Cortina WD (assigned)	0-07-20-W0206			1,700	-		
Glenn Valley WD (assigned)	1-07-20-W0219			1,730	-		
Holthouse WD (35%) (assigned)	1-07-20-W0224			857	-		
La Grande WD (assigned)	0-07-20-W0190			2,200	-		
Myers-Marsh MWC (assigned)	1-07-20-W0225			255	-		
Colusa County WD	14-06-200-304-A			62,200	-		
Colusa, County of	14-06-200-8310A			1	-		
Davis WD	14-06-200-6001A			4,000	-		
Dunnigan WD	14-06-200-399-A			19,000	-		
La Grande WD	7-07-20-W0022			5,000	-		
Westside WD	14-06-200-8222			65,000	-		
Subtotal				285,800	0		
Black Butte Unit							
4-E WD	3-07-20-W0312	N/A	N/A	35	-		
Elk Creek CSD	3-07-20-W0312				100		
Stony Creek WD	2-07-20-W0261	SCKWD	EPARK		3,345		
U.S. Forest Service (Salt Creek)	14-06-200-3621A	N/A	N/A		45		
Whitney Construction, Inc.	14-06-200-5749A	N/A	N/A		25		
U.S. Forest Service	14-06-200-3464A	N/A	N/A		10		
Colusa, County of (Stonyford)	4-07-20-W0348	N/A	N/A		40		
Subtotal				35	3,565		
Colusa Basin Drain							
Colusa Drain MWC ⁵	8-07-20-W0693	08N_PA	CBD049	5,600	-		
Colusa Drain MWC ⁵	8-07-20-W0693	08S_PA	CBD028	49,000	-		
Colusa Drain MWC ⁵	8-07-20-W0693	21_PA	KLR005	15,400	-		
Subtotal				70,000	0		
American River Division							
El Dorado ID	14-06-200-1357A	ELDID	FOLSM	-	7,550		
City of Roseville	14-06-200-3474A	26N_PU1	FOLSM	-	32,000		
Sacramento County WA	6-07-20-W1372	26S_PU4, 26S_PU6	SAC052, SAC062	-	22,000		
San Juan WD	6-07-20-W1373	26N_PU2, 26N_PU3	FOLSM	-	24,200		
East Bay MUD	14-06-200-5183A	EBMUD	FOLSM	-	133,000		
SMUD	14-06-200-5198A	60N_PU	FOLSM	-	30,000		
Sacramento County WA (SMUD assignment)	N/A	26S_PU4, 26S_PU6	SAC052, SAC062	-	30,000		
Placer County WA	14-06-200-5082A	6	FOLSM	-	35,000		
Subtotal				0	313,750		

Table 14-2. CVP Water Service Contracts for Service Areas North of Delta (contd.)

Central Valley Project Water Service Contractor	Contract Number	CalSim 3.0 Representation		Contract (acre-feet per year)	
		Demand Unit	Diversion Node	Irrigation	M&I
Delta Division					
Contra Costa WD	I75r-3401A	CCWD	RSL004, OMR021, VCT002	-	195,000
Subtotal				0	195,000
Other					
Feather WD	14-06-200-171-A	16_PA	FTR020	20,000	
City of West Sacramento ^{7,9}	0-07-20-W0187	21_PU	SAC066		23,600
Subtotal				20,00	23,600
Total				458,155	564,085

Notes:

- ¹ Split between irrigation and M&I use based on an urban demand of 8,000 acre-feet per year.
- ² Shasta County WA provides water to water purveyors in Shasta County, including 500 acre-feet to Keswick CSA, 190 acre-feet to Jones Valley CSA, and 332 acre-feet elsewhere. For modeling purposes, it is assumed that 332 acre-feet are made available to contractors in 02_PU. Under a 2008 transfer agreement, 100 acre-feet of Shasta County WA water were transferred from Keswick CSA to Jones Valley CSA.
- ³ Centerville Community Services District as part of the liquidation of the Townsend Flat Water Ditch Company's pre-1914 water rights holdings on Clear Creek has secured 900 acre-feet of CVP supplies in addition to the 2,900 acre-feet. These quantities of supply are not subject to cutbacks, and the water may be transferred to any other purveyor in the Redding Basin.
- ⁴ The McConnell Foundation as part of the liquidation of the Townsend Flat Water Ditch Company's pre-1914 water rights holdings on Clear Creek, has secured 5,100 acre-feet of CVP supplies. These quantities of supply are not subject to cutbacks, and the water may be transferred to any other purveyor in the Redding Basin. For modeling purposes, it is assumed that this water is available to urban municipalities.
- ⁵ Division of the 70,000 acre-feet per year contract for the Colusa Drain MWC is based on GIS land use (irrigated area) and split 8%, 70%, and 22% among the 3 demand units 08N_PA, 08S_PA, and 21_PA.
- ⁶ Placer County WA currently has no facilities to take delivery of CVP water from Folsom Lake.
- ⁷ Contract amount for West Sacramento includes water right water and CVP project water.
- ⁸ Split between irrigation and M&I use for Bella Vista WD based on Reclamation delivery data for water years 2000 – 2009.
- ⁹ The City of West Sacramento also could be categorized as a CVP settlement contractor.
- ¹⁰ Seven districts have assigned a total of 20,000 acre-feet to Colusa County Water District.

Key:

CSA = County Service Area, CSD = Community Service District, ID = Irrigation District, M&I = municipal and industrial
MUD = Municipal Utility District, MWC = Mutual Water Company, N/A = not applicable, SMUD = Sacramento Municipal Utility
District, WA = Water Agency, WD = Water District, .WTP = water treatment plant

Shortage Policy

During any year, certain water supply and/or operational conditions may limit the availability of CVP water to its contractors. Shortage provisions vary across CVP water service contracts. In general, allocations to CVP water service contractors south of the Delta are lower than allocations to service contractors in the Sacramento Valley. Since 1991, Reclamation has been developing an M&I water shortage policy applicable to all CVP M&I contractors. In 2001, Reclamation developed a draft water shortage policy in consultation with its M&I water service contractors. An Environmental Assessment (EA) was completed and published (Reclamation, 2005), and a Finding of No Significant Impact (FONSI) signed in December 2005.

Since 2005, the 2001 draft M&I water shortage policy has been implemented in accordance with Alternative 1B from the 2005 EA. The shortage provisions attempt to provide M&I contractors with a 75 percent water supply reliability based on a contractor's historical water use. The historical water use is defined by the last 3 years of water deliveries unconstrained by the

availability of CVP water. Before M&I supplies are reduced, irrigation water supplies would be reduced to or below 75 percent of contract entitlement. When allocations of irrigation water are reduced below 25 percent of contract entitlement, M&I deliveries are the greater of a fixed percentage of the adjusted historical water use, as shown in Table 14-3, or supplies needed for public health and safety, up to a maximum of 75 percent of historical water use. Reclamation is currently reviewing its shortage policy (Reclamation, 2011).

CalSim 3.0 imposes deficiencies on CVP M&I water service contractors based on the full contract amount, rather than the historical water use.

Table 14-3. Central Valley Project Municipal and Industrial Water Shortage Policy

Central Valley Project Irrigation Allocation	Central Valley Project M&I Allocation
100% of contract total	100% of contract total
75% – 100% of contract total	100% of contract total
70% of contract total	95% of historical use
65% of contract total	90% of historical use
60% of contract total	85% of historical use
55% of contract total	80% of historical use
25% – 50% of contract total	75% of historical use
20% of contract total	70% of historical use
15% of contract total	65% of historical use
10% of contract total	60% of historical use
5% of contract total	55% of historical use
0% of contract total	50% of historical use

Key:

M&I = municipal and industrial

Shasta and Trinity Divisions

Ten water service contractors receive water from the Shasta and Trinity River divisions of the CVP. These contractors are: Bella Vista WD, Clear Creek Community Service District (CSD), City of Redding, City of Shasta Lake, Shasta CSD, Shasta County Water Agency (WA), Centerville CSD, Keswick County Service Area (aka Keswick CSA No. 25), Mountain Gate CSD, and the U.S. Forest Service (USFS). The contract for USFS is for 10 acre-feet for M&I purposes and is not represented in CalSim 3.0. Contracts for Bella Vista WD and Clear Creek CSD that provide water for both irrigation and M&I purposes were renewed in 2005 for 25 years. Contract renewal for Keswick CSA is awaiting completion of Federal Endangered Species Act (ESA) consultation. Contracts for the other six agencies, which supply only M&I water, were renewed in 2005 for 40 years.

In CalSim 3.0, water service contractors on the right bank of the Sacramento River are represented by demand units 02_PU (Clear Creek CSD, Centerville CSD, Keswick CSA); water service contractors on the left bank of the river are represented by demand units 03_PU1 (City of Shasta Lake, Mountain Gate CSD, Jones Valley CSA), 03_PU2 (Bella Vista WD), and 03_PU3 (deliveries to the City of Redding's Buckeye Water Treatment Plant [WTP]).

Feather Water District

The Feather WD is located between the Feather River and Sutter Bypass, and is the only CVP contractor located within the Feather River basin. The district is represented by demand unit 16_PA in CalSim 3.0. An EA for contract renewal was completed in 2005, and the FONSI signed in 2005. The contract was renewed in 2005 to supply water for irrigation purposes for 25 years.

Sacramento River Division

The Sacramento River Division of the CVP includes the Tehama-Colusa Canal Unit, Corning Canal Unit, and Black Butte Unit. The division contains 22 water service contractors served by the Corning Canal and Tehama-Colusa Canal and from diversions from Stony Creek. Contracts were renewed in 2005 following completion of an EA in 2004, and the FONSI signed in 2005.

The Corning Canal and Tehama-Colusa Canal systems supply water to 17 water districts. The service areas of the two canals stretch from the City of Red Bluff to just north of the City of Woodland. In CalSim 3.0, demand unit 04_PA1 represents three water districts supplied from the Corning Canal. Demand unit 04_PA2 represents a single water district located within the Tehama-Colusa Canal service area north of Stony Creek. The remaining districts within the Tehama-Colusa Canal service area are represented by demand units 07N_PA and 07S_PA.⁵ All contracts are for the delivery of water for a period of 25 years for irrigation purposes.

The Black Butte Unit is located in the coastal foothills and supplies water to five contractors. CVP contracts with the County of Colusa (for the town of Stonyford), Whitney Construction, 4-E WD, and USFS are small, totaling 155 acre-feet. Points of diversion include Stony Gorge Reservoir and tributaries to Stony Creek above Black Butte Dam. Except for 4-E WD, these contracts are to deliver water for M&I purposes for a period of 40 years.⁶ These diversions are not represented in CalSim 3.0. Stony Creek WD has a 25-year contract for 3,345 acre-feet of irrigation water. The point of diversion is East Park Reservoir. CalSim 3.0 represents Stony Creek WD as a fixed diversion from East Park Reservoir of 2,700 acre-feet per year, which is approximately equal to the average diversion over recent years.

American River Division

The American River Division of the CVP includes the Folsom, and Auburn-Folsom South units. Folsom Dam, Lake, and Powerplant, Nimbus Dam, Lake Natoma, and Nimbus Powerplant are all components of the Folsom Unit. The Auburn-Folsom South Unit includes the Folsom South Canal, which originates at Lake Natoma, and the uncompleted Auburn Dam.

CVP water service contractors in the American River Division include Sacramento County WA, San Juan WD, Sacramento Municipal Utility District (SMUD), City of Roseville, Placer County WA, El Dorado ID contract for El Dorado Hills and Lake Hills Estates, and East Bay Municipal Utility District (EBMUD). CVP water service contracts for these agencies are described under the “American River” section of this chapter, which includes a discussion of the Water Forum

⁵ The division of Water Budget Area 07 into a northern (07N) and southern (07S) section is to aid simulation of the proposed Sites Dam and Reservoir. The division approximately follows Funks Creek.

⁶ Reclamation proposes to execute an interim renewal contract for up to 100 acre-feet per year of CVP water for the community of Elk Creek. The proposed contract would provide an adequate public water supply in the event of drought, when the primary supply of water from the Orland Project is inadequate.

Agreement. Reclamation has started the renewal process for CVP long-term contracts for the American River Division. Reclamation completed an Environmental Impact Statement (EIS) for the contract renewal in 2005 and initiated consultation under Section 7 of the ESA.

Delta Division

The CVP Delta Division is concerned with the transport of water from the Sacramento River to the south Delta where the water is pumped into the Delta-Mendota Canal. In-Delta facilities include the Delta Cross Channel, Contra Costa Canal, C. W. “Bill” Jones Pumping Plant (Jones Pumping Plant), and Tracy Fish Collection Facility. Contra Costa WD is the only in-Delta CVP water service contractor.

Contra Costa Water District

Contra Costa WD diverts water for both M&I and irrigation purposes under a CVP contract, its own permit and license at Mallard Slough, and under its own Los Vaqueros water right at the Old River and Victoria Canal. State Water Board Water Right Decision D-1641 specifies export limits in the form of an export to inflow (E/I) ratio, and defines export as the combined inflow to Clifton Court Forebay and pumping at Jones Pumping Plant. Contra Costa WD is considered an “in-Delta” diverter, not an exporter; therefore, project diversions used by Contra Costa WD are not constrained by the E/I ratio.

In 2005, Contra Costa WD signed a long-term contract with Reclamation for delivery of up to 195,000 acre-feet of water per year for M&I uses in the Contra Costa WD service area. The contract expires in 2045. Points of diversion include Contra Costa WD’s Pumping Plant No. 1 intake on Rock Slough, and the Los Vaqueros intakes on the Old River near State Route 4 and on Victoria Canal (previously known as the Alternative Intake Project). Through a settlement agreement with EBMUD, Contra Costa WD may receive a portion of its CVP supplies from the Freeport intake on the Sacramento River and an intertie with the Mokelumne Aqueduct.

The State Water Board⁷ Water Right Decision 1629 (D-1629), issued in 1994, gives Contra Costa WD the right to divert and store water for beneficial uses. Under appropriative water rights (Permits 20749 and 20750), the district may fill Los Vaqueros Reservoir from the intakes on the Old River and Victoria Canal and divert and store water from Kellogg Creek. These rights are in addition to contractual rights to divert and store CVP contract water. Up to 95,850 acre-feet per year may be diverted for storage between November 1 and June 30. Diversion is limited to periods when the Delta is in excess water conditions. Diversion of Delta water is also subject to the provisions of BOs for the protection of delta smelt and Chinook salmon. Under the existing water right, water must be stored in Los Vaqueros Reservoir for 30 days before delivery to Contra Costa WD. The water right permit for filling Los Vaqueros Reservoir includes the diversion to storage of up to 9,640 acre-feet per year of water from Kellogg Creek. Additionally, Contra Costa WD can divert up to 26,780 acre-feet per year of water from Mallard Slough under its own water right (License 317, Permit 19856).

Historically, Contra Costa WD has relied on water transfers to supplement its CVP contract allocation. For example, in 2003, Contra Costa WD purchased 5,000 acre-feet from Yuba County WA; the district also regularly uses water under its contract with East Contra Costa ID.

⁷ In 2010, the agency changed its name from the State Water Resources Control Board (SWRCB) to the State Water Board.

In CalSim 3.0, it is assumed that transfer water is available once Contra Costa WD has depleted its annual CVP allocation. To simplify water accounting in the model, it is assumed that transfer water is from in-Delta water sources.

CVP Wildlife Refuge Contractors

Reclamation has signed long-term agreements with USFWS, CDFW, and Grassland WD to provide CVP water to 19 wildlife refuges and wildlife areas in the Central Valley,⁸ as provided by the CVPIA. The CVPIA adopted by reference water supplies listed in the *Report on Refuge Water Supply Investigations* (Reclamation, 1989a) and *San Joaquin Basin Action Plan/Kesterson Mitigation Plan* (Reclamation, 1989b) as specific quantities of water to be provided to the refuges.⁹ Level 2 is the amount of water required for minimum wetlands and wildlife habitat management, based on historical annual deliveries before 1989. Incremental Level 4 is additional water required to achieve optimum waterfowl habitat management. Level 2 water supplies include CVP water, non-project water, and groundwater pumping. Reclamation, in partnership with USFWS, has developed a Water Acquisition Program to provide incremental Level 4 refuge water supplies, acquired from willing sellers. Table 14-4 summarizes Level 2 and Level 4 contract amounts for the various refuges and wildlife areas.

⁸ This includes the Pixley and Kern NWRs, located in the Tulare Lake Hydrologic Region, which are represented in CalSim, but are not part of the CalSim 3.0 development project.

⁹ Level 2 water supplies include those specifically identified as Level 2 in the *Report on Refuge Water Supply Investigations* (Reclamation, 1989a), and two-thirds of the amount needed for full habitat development per the *San Joaquin Basin Action Plan/Kesterson Mitigation Plan* (Reclamation, 1989b). Level 4 water supplies include those specifically identified as Level 4 in the *Report on Refuge Water Supply Investigations*, and the incremental amount needed to provide full habitat development per the *San Joaquin Basin Action Plan/Kesterson Mitigation Plan*. The amount of water diverted to meet these demands at the refuge boundaries will be greater because of loss of water during conveyance.

Table 14-4. Refuge Level 2 and Level 4 Amounts per Exhibit B of Water Service Contracts

Wildlife Refuge Area	Contract Number	CalSim 3.0 Representation		Point of Diversion	Water Supply Contract Amounts (acre-feet/year) ⁸			
		Demand Unit	Diversion Node		Level 2 Amount ¹	Incremental Level 4	Replacement Water ²	Total Level 4 Amount
Sacramento NWR	01-WC-20-1757	08N_PR1	GCC027	Glenn-Colusa Canal	46,400	3,600	–	50,000
Delevan NWR	01-WC-20-1757	08N_PR2	GCC039	Glenn-Colusa Canal	20,950	9,050	–	30,000
Colusa NWR	01-WC-20-1757	08S_PR	GCC056, CBD037	Glenn-Colusa Canal, Colusa Basin Drain	25,000	–	–	25,000
Sutter NWR ⁵	01-WC-20-1757	17S_PR	SBP028, SEC009	Sutter Bypass, Sutter Extension Canal	23,500 ⁶	6,500	–	30,000
Gray Lodge WA ⁵	01-WC-20-1755	17N_PR	JBC002	Joint Board Canal	35,400 ⁷	8,600	–	44,000
Total					151,250	27,750	0	179,000

Notes:

¹ Level 2 amounts do not include conveyance losses.

² Replacement water is water that Reclamation provides from CVP yield to certain CVPIA refuges through contracts with management agencies executed before the passage of the CVPIA. It is to be replaced to the CVP when water can be acquired from willing sellers.

³ Contract amounts include replacement water. Without replacement water the contract amounts are as follows: San Luis Unit, 13,350 acre-feet; Kesterson Unit, 3,500 acre-feet; Freitas Unit, 3,527 acre-feet; Mendota WA, 18,500 acre-feet, and Volta WA, 10,000 acre-feet.

⁴ Merced NWR receives 15,000 acre-feet of mitigation water from Merced ID in accordance with Article 45 of its 1964 Federal Energy Regulatory Commission (FERC) license, which expires 2/28/2014. An additional 1,000 acre-feet is met through groundwater pumping.

⁵ Deliveries of Level 2 water are limited by conveyance constraints.

⁶ Includes 3,000 acre-feet of non-CVP water to be delivered from Sutter Extension WD

⁷ Includes 18,841 acre-feet of non-CVP water to be delivered by Biggs-West Gridley WD and SWP. Biggs-West Gridley WD delivers up to 6,949 acre-feet to primary lands and up to 3,936 acre-feet to secondary lands within the district. The SWP delivers up to 5,079 acre-feet of surplus water to primary lands and 2,877 acre-feet of surplus water to secondary lands

⁸ Level 2 and incremental Level 4 amounts differ from Reclamation 1989 reports because of inclusion of replacement water. Level 2 water under the water supply contracts includes 26,007 acre-feet of Replacement water. Under the water supply contracts, incremental Level 4 amounts have been reduced by the same amount.

Key:

“–” = No contract or water right

CVP = Central Valley Project

CVPIA = Central Valley Project Improvement Act

ID = Irrigation District

NWR = National Wildlife Refuge

RCD = Resource Conservation District

Reclamation = U.S. Department of the Interior, Bureau of Reclamation

SWP = State Water Project

WA = Wildlife Area or Wildlife Management Area

WD = Water District

State Water Project

The SWP operates under long-term contracts with 29 public water agencies. These agencies, in return, deliver water to wholesalers or retailers, or deliver water directly to agricultural and M&I water users. Additionally, DWR has signed “settlement” agreements with senior water right holders on the Feather River to resolve water supply issues associated with the operation of the SWP facilities at Lake Oroville and the Thermalito Forebay and Afterbay. The following sections describe these contracts and agreements.

SWP Long-term Contracts and Water Rights Agreements

The SWP contracts between DWR and individual State water contractors define several classifications of water available for delivery under specific circumstances. All classifications are considered “project water.” Table A is an exhibit to the SWP long-term water supply contracts. Each year, each contractor may request an amount not to exceed its Table A amount. However, delivery capabilities are frequently lower than Table A amounts. The Monterey Agreement, signed by 27 of the 29 SWP water contractors in 1995, restructured the SWP contracts to allocate water based on contractual Table A amounts instead of the amount of water requested for a given year. In times of shortages, the water supply to SWP agricultural and M&I contractors is reduced equally, in proportion to their Table A amounts (DWR, 2011). Annual Table A amounts for each of the 29 SWP contractors are presented in Table 14-5. The SWP allocation (proportion of Table A to be delivered) for any specific year is made based on a number of factors, including existing storage, current regulatory constraints, projected hydrologic conditions, and desired carryover storage. Since 1995, annual delivery of Table A water has varied from 0.476 MAF in 2014 to 3.172 MAF in 2000 (DWR, 2017).

Many contractors also make frequent use of additional contract water types to increase or decrease the amount of water available to them under Table A. Other contract types of water include Article 21 water, turn-back pool water, and carryover water. Since 1995, Article 21 deliveries have varied from zero in 2012 and 2013 to 0.731 MAF in 2005 (DWR, 2015).

Table 14-5. Annual State Water Project Table A Amounts

State Water Project Long-term Contractor	CalSim 3.0 Representation		Table A Amount (acre-feet per year)
	Demand Unit	Diversion Node(s)	DCR 2015
Feather River			
County of Butte ¹	N/A	N/A	27,500
Plumas County FC&WCD ²	N/A	N/A	2,700
City of Yuba City	16_PU	FTR031	9,600
Total for Feather River			39,800
North Bay			
Napa County FC&WCD	NAPA	BKR004	29,025
Solano County WA	N/A	BKR004	47,506
Total for North Bay			76,531
South Bay			
Alameda County FC&WCD, Zone 7	N/A	SBA017,SBA019	80,619
Alameda County WD	N/A	SBA029	42,000
Santa Clara Valley WD	N/A	SBA036	100,000
Total for South Bay Aqueduct			222,619
San Joaquin Valley			
Oak Flat WD	N/A	N/A	5,700
County of Kings	N/A	N/A	9,305
Dudley Ridge WD	N/A	N/A	50,343
Empire West Side ID	N/A	N/A	2,000
Kern County WA	N/A	N/A	982,730
Tulare Lake Basin WSD	N/A	N/A	88,922
Total for San Joaquin Valley			1,139,000
Central Coast			
San Luis Obispo County FC&WCD	N/A	N/A	25,000
Santa Barbara County FC&WCD	N/A	N/A	45,486
Total for Central Coast			70,486
Southern California			
Antelope Valley-East Kern WA	N/A	N/A	141,400
Castaic Lake WA	N/A	N/A	95,200
Coachella Valley WD	N/A	N/A	138,350
Crestline-Lake Arrowhead WA	N/A	N/A	5,800
Desert WA	N/A	N/A	55,750
Littlerock Creek ID	N/A	N/A	2,300
Mojave WA	N/A	N/A	82,800
Metropolitan WD	N/A	N/A	1,911,500
Palmdale WD	N/A	N/A	21,300
San Bernardino Valley MWD	N/A	N/A	102,600
San Gabriel Valley MWD	N/A	N/A	28,800
San Geronio Pass WA	N/A	N/A	17,300
Ventura County FCD	N/A	N/A	20,000
Total for Southern California			2,623,100
Table A Total			4,171,536

Source: The State Water Project Delivery Capability Report 2015, Department of Water Resources. July 2015.

Table 14-5. Maximum Annual State Water Project Table A Amounts (contd.)

Notes:

¹ County of Butte wholesales water to municipal and industrial water purveyors in the county. In CalSim 3.0, water from the county is available for demand units 11_NU1 (California Water Service Company – Oroville), 12_NU1 (Thermalito ID), and 16_PU (City of Yuba City).

² Plumas County FC&WCD is not represented in CalSim 3.0 and not in DCR 2015.

Key:

FC&WCD = Flood Control and Water Conservation District

FCD = Flood Control District

ID = Irrigation District

MWD = Metropolitan Water District of Southern California

N/A = not applicable

WA = Water Agency

WD = Water District

WSD = Water Storage District

Feather River Basin

Within the Feather River basin, DWR supplies water to both long-term contractors and water right holders.

Long-term Contracts

Three SWP long-term contractors are located north of the Delta: Plumas County FC&WCD, Butte County, and the City of Yuba City. Plumas County FC&WCD is located upstream from Lake Oroville in the upper Feather River basin, and is not represented in CalSim 3.0. The City of Yuba City diverts water from the Feather River immediately upstream from the Yuba River confluence at Feather River mile (RM) 28. In CalSim 3.0, the city is represented by demand unit 16_PU.

Butte County acts as a wholesaler of SWP water to municipal agencies within the county. The county has a maximum Table A amount of 27,500 acre-feet, however, the county does not yet need, nor use, its full Table A amount. For the last 40 years, Butte County and DWR have amended the county's SWP water supply contract and reduced its annual Table A amounts on a temporary basis. Historically, Butte County has opted to receive 300 to 3,500 acre-feet of its Table A water, which, for the last 20 years, has been sold to two in-county retailers: Del Oro Water Company (WC) and California Water Service Company Oroville (CalWater – Oroville). The remaining unused allocations reverted to the SWP pool.¹⁰ Beginning in 2008, DWR required the county to take and pay for its Table A allocation. Butte County is not represented explicitly in CalSim 3.0 because the county does not deliver water directly, but sells water to other water purveyors.¹¹ For modeling purposes, Butte County's Table A amount is available to Thermalito

¹⁰ The 29 contractors who buy water from the SWP can sell their excess allocated Table A water to each other through DWR's "turn-back water Pool" (pursuant to Article 56 of the Water Supply Contracts). The turn-back water pool allows SWP Contractors with excess allocated Table A water to turn their water back into a pool for purchase by other SWP contractors. To participate, on an annual basis, selling contractors sign offers of commitment as to how much water they want to sell, and buying contractors commit to how much water they want to purchase. The sales and purchases of the turn-back water pool do not affect the 2008 allocation of Table A water to any SWP contractor. Turn-back water is delivered to a contractor's service area from the SWP consistent with the contractor's long-term water supply contract. The turn-back water pool is conducted on a short-term basis, and does not set precedent for future program years.

¹¹ When Oroville Dam was built in the 1960s, Butte County negotiated to be a State water contractor and receive 27,500 acre-feet of water per year. Butte County and 28 other State water contractors must pay the State for that water regardless of whether or not the water is used, at a rate of about \$30 an acre-foot. To date, Butte County only can use about 2,500 acre-feet of that water through CalWater – Oroville and Del Oro WC. In the past, DWR had allowed Butte County not to pay for unused water, and the water would be available for use elsewhere. However, in 2008, DWR required Butte County to pay for unused water. DWR is allowing Butte County to sell the water outside the county for 2 years. Butte County is negotiating a 2-year agreement to sell water to Palmdale WD. Within 7 to 10 years Butte County plans to establish ways to use that SWP water within the county.

ID (demand unit 11_NU1), CalWater – Oroville (demand unit 12_NU1), and the City of Yuba City (demand unit 16_PU). Cal Water – Oroville purchases water from Pacific Gas and Electric (PG&E), which is delivered from the West Branch of the Feather River via the Miocene Canal and diverts SWP, through Butte County, from the Thermalito Power Canal. Thermalito ID holds water rights associated with Concow Reservoir. Under an agreement with the State, the reservoir is kept full during the summer months for fishery purposes. Water released in the fall, winter, and spring is stored in Lake Oroville and re-released in the summer to meet Thermalito ID demands.

Water Rights Agreements

DWR has signed contracts/agreements with districts in the Feather River Service Area (FRSA). These districts include Western Canal WD, Joint WD Board, Plumas MWC, Garden Highway MWC, Oswald WD, and Tudor MWC. The agreements often include two classes of water: water rights that predate the construction of Oroville Dam and are not subject to reductions; and SWP contract water that is subject to reductions based on the annual unimpaired inflow to Lake Oroville. All FRSA agreements are for agricultural water use. These agreements typically set limits on the diversion of water during an irrigation season defined as April through October. An exception is DWR's agreement with Western Canal WD that specifies a March-to-October diversion period. The agreements with DWR do not limit diversions outside of these periods, and districts can divert Feather River water for beneficial use under riparian or appropriative water rights. Table 14-6 presents the details of the contract and water right amounts as represented in CalSim 3.0. The FRSA is represented in CalSim 3.0 by portions of Water Budget Areas (WBA) 11, 12 and 16.

In addition to water districts, many individual agricultural water users hold water rights senior to the SWP for Feather River water. Data on water entitlements for the Feather River were collected by DWR as part of the Feather River Trial Distribution Program, and published in Bulletin 140 (DWR, 1965). The net irrigable area of lands of riparian and appropriative water rights was estimated to be approximately 30,000 acres. For CalSim 3.0, surface water diversions to these individuals are based on estimates of irrigated riparian lands, beneficial use, and appropriative water rights (Sergeant, 2008).

North Bay Aqueduct

Solano County WA and Napa County Flood Control and Water Conservation District (FC&WCD) hold contracts with DWR for delivery of water as part of the SWP. Water is diverted from the Delta at the Barker Slough Pumping Plant (node BKR004), which is located on the north shore of Barker Slough, 0.5 miles east of State Highway 113 and a few miles north of Rio Vista. From the pumping plant, water is conveyed approximately 21 miles via the North Bay Aqueduct to the Cordelia Forebay (node NBA021), adjacent to the City of Vallejo. From there, SWP water is pumped an additional 6 miles to the Napa Turnout Reservoir (node NBA027), a raw water storage tank for the Jamieson Canyon and American Canyon WTPs.

In 2008, the USFWS issued a BO for the preservation of delta smelt populations that reduced the total SWP annual diversion at the Barker Slough Pumping Plant to 71 TAF (USFWS, 2008). In 2009, an Incidental Take Permit issued by CDFW for the preservation of longfin smelt populations imposed further pumping restrictions at the Barker Slough Pumping Plant of a

maximum of 50 CFS (7-day average flows) during dry and critical dry years from January 15 to March 31 (CDFG, 2009) when CDFW determines such a restriction is necessary.

Solano County Water Agency

The Solano County WA, formed in 1951, provides wholesale, untreated water supplies for municipal and agricultural purposes. It acts as a wholesaler for Reclamation's Solano Project (described later) and the SWP. The agency encompasses the entire County of Solano, parts of UC Davis located in Yolo County, and approximately 2,800 acres of RD 2068, which also is located in Yolo County (Solano, 2004). Its member agencies include the Cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun, Vacaville, and Vallejo; California State Prison-Solano; University of California, Davis (UC Davis); Solano ID; Maine Prairie WD; and Reclamation District (RD) 2068. Water from the North Bay Aqueduct is delivered to the Cities of Benicia, Vallejo, Fairfield, and Vacaville. The Cities of Suisun, Rio Vista, and Dixon all have contract entitlements to water from the North Bay Aqueduct but currently do not have facilities to receive this supply. Table A entitlements for the member agencies' municipalities are summarized in Table 14-7.

Table 14-6. Feather River Service Area Contracts and Water Rights

Water Purveyor	Point of Diversion	CalSim 3.0 Representation		Contract Amount (acre-feet per year)			Contract Period of Diversion
		Demand Unit	Diversion Node	Table A	Settlement Contract	Water Right	
Western Canal WD	Thermalito Afterbay	11_SA1	THRMA	–	150,000	145,000	Mar – Oct
Richvale ID ¹		11_SA2		–	148,500	1,350	
Biggs-West Gridley WD ¹		11_SA3		–	160,000	1,000	
Butte WD ¹				–	131,500	1,650	
Sutter Extension WD ¹	Thermalito Afterbay	11_SA4	THRMA	–	110,000	1,000	
	Sunset Pumps		FTR039	–	50,000 ⁵	–	
Butte County	N/A	11_PU	N/A	27,500	–	–	Jan – Dec
Thermalito ID	Power Canal	11_NU1	PCL000	–	–	8,200 ²	Jan – Dec
South Feather Water and Power Agency	Lake Oroville	13_NU1	OROVL	–	–	17,555 ³	Jan – Dec
Plumas MWC	Feather River	15S_SA	FTR018	–	8,000	6,000	Jan – Dec
Garden Highway MWC		16_SA	FTR014	–	12,870	5,130	Apr – Oct
Oswald WD			FTR021	–	2,850	150	Apr – Oct
Tudor MWC			FTR018	–	5,090	210	Jan – Dec
City of Yuba City		16_PU	FTR031	9,600	–	–	Jan – Dec
Subtotal				37,100	778,810	187,245	
Miscellaneous diverters ⁶	Feather River				30,000		
Feather WD ⁷	Feather River	16_PA	FTR021		20,000		
Total					1,016,055		

Notes:

¹ The Joint WD Board includes Biggs-West Gridley WD, Butte WD, Richvale ID, and Sutter Extension WD. The Joint WD Board signed a settlement agreement with DWR for 550,000 acre-feet of water, subject to deficiencies (settlement water), and 5,000 acre-feet of water, not subject to deficiencies, in dry years. These amounts are shared among the member districts, for modeling purposes, as shown in the table. Additionally, the districts have the right to divert up to 10,000 acre-feet of carriage water during the irrigation season, provided that it is returned to the Feather River above the City of Yuba City as operational spills.

² The amount of water available to Thermalito ID depends on the water supply at Lake Wilenor. The maximum entitlement is 8,200 acre-feet per year.

³ The amount of water available to South Feather Water and Power Agency depends on the water supply at Ponderosa Reservoir. The maximum entitlement is 17,555 acre-feet per year.

⁴ DWR has additional agreements with Last Chance Creek WD, which holds pre-1914 water rights on the Middle Fork of the Feather River.

⁵ The amount of water that may be diverted at the Sunset Pumps is increased to 65,000 acre-feet when the unimpaired runoff to Lake Oroville for the period April 1 through July 31, as forecasted by DWR on May 10, is equal to or exceeds 1,500,000 acre-feet, or when such forecasted runoff when added to the previous year's April 1 to July 31 runoff into Lake Oroville is equal to or exceeds 3,000,000 acre-feet.

⁶ These include minor diverters who hold riparian and appropriative water rights.

⁷ Feather WD is a CVP contractor but is included here to show the total demands on Lake Oroville.

Key:

“–” = No contract or water right

CVP = Central Valley Project

DWR = California Department of Water Resources

ID = Irrigation District

MWC = Mutual Water Company

WD = Water District

Table 14-7. Solano County Water Agency Member Agency Water Supplies

Member Agency	Demand Unit	Amounts (acre-feet per year)				
		Table A	Solano Project	Water Rights	Settlement Water	Local Supplies
Benicia, City of ²	BNCIA	17,200 ¹¹	–	–	10,500	500 ¹²
CSP - Solano	CSPSO	1,300	1,200	–	–	–
Dixon, City of	25_NU	(1,500) ¹⁰	–	–	–	–
Fairfield, City of ³	FRFLD	14,678	9,200	–	11,800	–
Maine Prairie WD ⁷	25_PA2	–	15,000	–	–	–
RD 2068	25_NA	–	–	75,000	–	–
Rio Vista, City of	25_NU	(1,500) ¹⁰	–	–	–	–
Solano ID ^{6,7}	25_PA1, SIDSH	–	141,000	–	–	–
Suisun City ⁴	SUISN	(1,300) ¹⁰	1,600	–	–	–
UC Davis	20_PA	–	4,000	–	–	–
Vacaville, City of ⁵	25_PU	8,978 ¹³	5,750 ¹⁴	–	9,320	–
Vallejo, City of	VLLJO	5,600 ⁹	14,600	22,780 ⁸	–	4,150 ¹²
Total		47,756	207,350¹		31,620	

Notes:

- ¹ U.S. Bureau of Reclamation assumes a 15,000 acre-feet per year operating loss associated with the Putah South Canal.
- ² The City of Benicia can take water from the South Putah Canal terminal reservoir under water sales agreements. The City of Benicia has an agreement with the City of Vallejo to purchase up to 1,100 acre-feet per year of its Solano Project water. The city also has an agreement, signed in March 2009, to purchase 2,000 acre-feet of Solano Project water from Solano ID.
- ³ In addition to its Solano Project contract water, the City of Fairfield has an agreement with Solano ID to purchase up to 16,018 acre-feet of water per year.
- ⁴ In addition to its Solano Project contract water, Suisun City receives additional water under a Joint Powers Authority agreement with Solano ID. The annual amount varies. In 2010, Solano ID provided 2,514 acre-feet of water to the city.
- ⁵ To supplement its Solano Project water, the City of Vacaville has signed an agreement with Solano ID. The delivery schedule started at 1,000 acre-feet per year in 1995 and increases incrementally to a maximum of 10,050 acre-feet in 2016. The amount available under the agreement for 2005 is 3,000 acre-feet.
- ⁶ Solano ID has various water supply and exchange agreements with other Solano County WA member units and may sell water to the Cities of Benicia, Fairfield, Suisun, and Vacaville.
- ⁷ Under an exchange agreement between Maine-Prairie WD and Solano ID, Maine-Prairie WD exchanges up to 10,000 acre-feet of its Solano Project water for up to 20,000 acre-feet of tailwater from Solano ID.
- ⁸ Vallejo "permit water" is for a year-round diversion of 31.52 CFS. However, through contracts and agreements, DWR has limited the annual amount of permit water to 17,287 acre-feet. This water may be sold to the Cities of American Canyon, Benicia, Fairfield, Vacaville, and Travis Air Force Base.
- ⁹ Travis Air Force Base has an agreement with the City of Vallejo to purchase one-third of the city's SWP Table A entitlement, annually. Water is delivered from a turnout off the aqueduct to the air force base water treatment plant. Additional Travis Air Force Base demand may be met with Vallejo's water right water.
- ¹⁰ The Cities of Dixon, Rio Vista, and Suisun City currently have no transmission or treatment facilities to use water from the North Bay Aqueduct.
- ¹¹ The Table A amount for the City of Benicia may be reduced to 16,075 if the Cities of Dixon and Rio Vista take Table A water in the future.
- ¹² Not represented in CalSim 3.0.
- ¹³ The City of Vacaville Table A amount comprises an initial amount of 6,100 acre-feet plus 2,878 acre-feet purchased from Kern County WA in 2000.
- ¹⁴ In addition to its entitlement from Solano County WA, Vacaville entered into a 1995 Master Water Agreement with Solano ID, which was amended in 2010. Pursuant to the agreement, Vacaville receives an increasing supply from SID increasing from 2,500 acre-feet in 2010 to 9,825 acre-feet in 2030, and 10,050 acre-feet from 2040 through 2050.

Key:

– = No contract or water right

CSP = California State Prison

ID = Irrigation District

RD = Reclamation District

UC = University of California

Napa County Flood Control and Water Conservation District

Napa County FC&WCD acts as the SWP contractor on behalf of 5 municipalities in Napa County: the Cities of Calistoga, Napa, St. Helena, and American Canyon, and the Town of Yountville. The original 1966 agreement between DWR and Napa County FC&WCD provided for gradually increasing annual allotments of Table A amounts, reaching a maximum of 25,000 acre-feet by 1988. The maximum Table A allotment was increased to 29,025 acre-feet by 2021, following the purchase of SWP Table A entitlement from Kern County WA in 2000. In 2009, the SWP contract was amended to accelerate the entitlement schedule, with Napa County FC&WCD granted its full 2021 Table A amount of 29,025 beginning in 2010. Table A entitlements for the 5 member agencies are summarized in Table 14-8. Raw water deliveries are treated at the City of Napa's Jamieson Canyon WTP and at the City of American Canyon's American Canyon WTP.

The City of Napa's Table A entitlement is currently 21,900 acre-feet. This includes the City of St. Helena's Table A water (1,000 acre-feet), which was transferred in 2006¹² and the town of Yountville's Table A entitlement, which was transferred in 2009. However, Table A deliveries may be limited to 19,900 acre-feet per year due to contracted North Bay Aqueduct conveyance capacity.¹³ The City of Napa sells treated water to the communities of Calistoga (a wholesale customer) and St. Helena (a retail customer). The town of Yountville no longer receives Table A water except for emergency supplies. The City of American Canyon has a Table A entitlement of 5,200 acre-feet. The City of Calistoga has a Table A entitlement of 1,925 acre-feet.

Table 14-8. Napa County Flood Control & Water Conservation District Table A Amounts

Member Agency	Table A Amounts (acre-feet)			
	Initial Amount	KCWA Transfer	Napa Assignment	Final Amount
American Canyon	4,700	500	–	5,200
Calistoga	1,000	925	–	1,925
Helena	–	1,000	1,000	–
Napa	18,800	1,000	–	21,900
Yountville	500	600	1,100	–
Total	25,000	4,025	2,100	29,025

Key:

“–” = No contract amount

KCWA = Kern County Water Agency

City of Vallejo Permit Water

The City of Vallejo holds a water right (Permit 8993) issued in 1948 for the diversion of up to 31.52 CFS year-round from Cache Slough, primarily for M&I purposes. This is equivalent to a maximum of 22,780 acre-feet per year. The permit was perfected in 1965 (License 7848). An additional point of diversion was added in 1966 and amended to allow water for irrigation purposes as part of an exchange agreement with Solano ID. The place of use under the water right permit includes the Cities of Vallejo and Benicia, and parts of the City of Fairfield in

¹² The entitlement transfer agreement between the Cities of Napa and St. Helena requires that St. Helena purchase a minimum annual amount of 400 acre-feet. The minimum annual purchase increases to 600 acre-feet if the SWP allocation as of April 15 is 30 percent or higher. St. Helena has the option to purchase up to 200 acre-feet more if the April 15 SWP allocation reaches 50% (Napa, 2011).

¹³ Transfers of SWP Table A entitlement to the City of Napa from St. Helena (1,000 acre-feet) and Kern County Water Agency (1,000 acre-feet) did not include conveyance capacity.

Solano County and the American Canyon area in Napa County. Before construction of the North Bay Aqueduct, the Cache Slough Pipeline conveyed water from Cache Slough to the City of Vallejo. The City of Vallejo subsequently paid DWR for the right to use the North Bay Aqueduct to convey this water, now commonly referred to as Vallejo Permit Water.¹⁴ Through contracts and agreements, DWR has limited the annual amount of permit water to 17,287 acre-feet. An amendment to this agreement would be required to increase diversion of permit water to a maximum of 22,780 acre-feet per year. The 2005 Urban Water Management Plan (UWMP) for the City of Vallejo (Vallejo, 2006) assumes that the full 22,780 acre-feet will be available to meet future demands. Permit water is senior to SWP water rights and is not subject to Term 91 curtailments.¹⁵ The City of Vallejo may take permit water before taking delivery of Table A water. CalSim 3.0 does not represent the Cache Slough pipeline explicitly, but incorporates its capacity with the North Bay Aqueduct.

Settlement Water

In 1998, the Cities of Fairfield, Benicia, and Vacaville filed applications with the State Water Board to appropriate a total of 31,620 acre-feet. This water would be wheeled through North Bay Aqueduct facilities. DWR, the City of Vallejo, and others protested these applications. In a subsequent settlement agreement between DWR, Solano County WA, and the three applicants, DWR agreed to deliver up to 31,620 acre-feet to the applicants. This water is known as “settlement water.” A separate *Agreement Regarding Priorities for Non-Project Water Transported through the NBA* was signed in 2003 by DWR, the City of Vallejo, and the three applicants. This agreement establishes relative conveyance priorities for SWP water, permit water, and settlement water. Settlement water is not available when State Water Board Term 91 is in effect.

Other Reclamation Projects

Reclamation projects in the Central Valley, in addition to the CVP, include the Orland Project and the Solano Project.

Orland Project

The Orland Project, centered on Stony Creek, is one of the oldest Federal reclamation projects in the United States. Water was delivered to the first farm units at the beginning of the 1910

¹⁴ The Cache Creek Pumping Station is no longer used. However, the pipeline is now interconnected with the North Bay Aqueduct, and parts of the Cache Slough Pipeline are still used to convey Vallejo Permit Water from the North Bay Aqueduct to the City of Vallejo.

¹⁵ Term 91 prohibits the licensee from diverting water when satisfaction of in-basin entitlements requires release of supplemental project water by the CVP or SWP. Supplemental project water (SW) is defined as water imported to the basin by the projects, and water released from project storage that is in excess of export diversions (EX), project carriage water (CW), and project in-basin deliveries. The method for calculating when supplemental water exists was developed in Order 81-15 (SWRCB, 1981) and D-1594 (SWRCB, 1984):

$$SW = SR - (EX + CW)$$

“SR” is the net storage release from Shasta, Oroville, and Folsom reservoirs plus imports to the Sacramento Valley from the Trinity River CVP complex, less exports from the Folsom South Canal. “EX” is the CVP and SWP export diversions at Clifton Court Forebay, Jones Pumping Plant, North Bay Aqueduct, and Contra Costa Canal Intake. “CW” is the project carriage water (i.e., the additional outflow requirement to achieve water quality standards in the Delta because of project exports). The carriage water term is zero when flow rather than salinity objectives control Delta operations.

growing season. The main elements of the project include East Park Dam, Stony Gorge Dam, Rainbow Diversion Dam and East Park Feeder Canal, South Diversion Intake and South Canal, and Northside Diversion Dam and North Canal. The South Diversion Intake and Canal were built in conjunction with Black Butte Dam in 1963. Stony Creek is an adjudicated stream system.

Pre-1914 Appropriative Water Rights

The Orland Project is entitled to store 51,000 acre-feet per year in East Park Reservoir based on a pre-1914 appropriative right to divert up to 250 CFS from Stony Creek at the Rainbow Diversion. It is also entitled to directly divert up to 279 CFS from March 15 to October 15, but not to exceed 85,050 acre-feet per year.

Post-1914 Appropriative Water Rights

Water is diverted to storage in Stony Gorge Reservoir under State Water Board License 2652 (Application 2212). The storage water rights are for diversion up to a maximum of 50,200 acre-feet from November 1 through May 1.

Black Butte Dam, constructed by the U.S Army Corps of Engineers (USACE), is an authorized facility of the CVP. The CVP and Orland Project are separate projects with separate water rights. Water stored in Black Butte Lake is CVP water. Water rights associated with Black Butte Dam and Lake are junior to water rights adjudicated in the Angle Decree. Water is diverted to storage in Black Butte under water right Permit 13776 to be collected from November 1 through April 30 up to a maximum of 160,000 acre-feet.

Adjudicated Water Rights

The Angle Decree, issued in 1930, adjudicated and confirmed the priorities of water rights to Stony Creek. Under the adjudication, the U.S. Government (i.e., Reclamation) is entitled to divert water to storage in East Park Reservoir and to divert water for use on lands within the Orland Project. The adjudicated pre-1914 water right comprises a right to collect to storage 51,000 acre-feet in East Park Reservoir and a direct diversion of 265 CFS. The Angle Decree also recognized Glenn-Colusa ID pre-1914 entitlement for direct diversion of Stony Creek flows in excess of 265 CFS and limited Reclamation's diversion to storage from March through September to water not needed by the district. Additional water, over and above 51,000 acre-feet may be collected to storage by Reclamation if in excess of the district's needs.

Solano Project

The Solano Project was constructed from 1953 to 1959 by Reclamation to provide irrigation water to approximately 96,000 acres of land located in Solano County.¹⁶ The project also furnishes M&I water to the major cities of Solano County. Project facilities include Lake Berryessa and Monticello Dam, Putah Diversion Dam, Putah South Canal and canal distribution system, and a small terminal reservoir (Solano, 2011). Water released from Monticello Dam is diverted at the Putah Diversion Dam located approximately 6 miles downstream. Water is subsequently conveyed to its end users via the Putah South Canal. In addition to the Solano Project, there are minor diversions in the Putah Creek watershed under both riparian and appropriative water rights. These include diversions by UC Davis from the South Fork of Putah Creek. These minor diversions are not represented in CalSim 3.0.

¹⁶ The Solano Project's Monticello Dam, Lake Berryessa, and upstream watershed are located in Napa County.

Solano County WA holds contracts with Reclamation for water supply from the Solano Project. Water right permits for the Solano Project were held by Reclamation in trust for Solano Project water users. However, when the permits were converted to a license, the license was issued in the name of the Solano Project water users. The water right permits specify releases to Putah Creek and limits upstream water development in the Lake Berryessa watershed. Solano County WA has entered into agreements with cities, districts, and State agencies to provide water from the Solano Project. The contracts with the Solano Project member units are for the full supply available from the Solano Project. The contracting agencies and their contract amounts are presented in Table 14-8. Reclamation is contractually committed to deliver the full contract amount of water supply from the Solano Project unless the water supply does not physically exist. All Solano Project contractors, whether they are municipal or agricultural, are on an equal basis for Solano Project water supply.

Non-Project Water

For the purposes of CalSim 3.0, project water includes all water that is diverted under contracts and agreements with DWR and/or Reclamation. In this context, project water should not be confused with water that is supplied to CVP settlement contractors, which is designated as either base supply or project water. The following sections describe water rights and water contracts for water users who divert non-project water. These sections are organized by river basin.

Sacramento River

Major diverters of non-project water along the Sacramento River include CVP settlement contractors, Llano Seco Rancho, the Cities of Sacramento and West Sacramento. Additionally, Sacramento County WA and East Bay Municipal Utility District (MUD) may divert non-project water as part of the Freeport Regional Water Project (FRWP). In the future, the Cities of Davis and Woodland may divert non-project water as part of the Davis-Woodland Project.

Settlement Contractors

CVP settlement contracts for agricultural water use define the amounts of water that may be diverted by contractors from April through October. However, these contracts do not restrict diversions outside this period under appropriative and/or riparian water rights. Minor amounts of agricultural water are needed in the fall and winter months for irrigation of orchards and other perennial crops, and for frost protection of vineyards. Larger amounts of water are required in the fall for flooding rice fields to provide duck habitat and aid rice straw decomposition. Diversions from the Sacramento River during the fall and winter may impact CVP and SWP operations in dry years. Post-1965 appropriative water rights are generally subject to diversion limitations under State Water Board Standard Permit Term 91 (Term 91). Term 91 prohibits diversion of water whenever the CVP and SWP are releasing stored or imported water to implement Delta water quality objectives. Term 91 does not affect deliveries of contract water between April 1 and October 31.

Table 14-9. Selected Appropriative Water Rights Held by CVP Settlement Contractors

Central Valley Project Settlement Contractor	Demand Unit	Water Right Permit and Terms ¹⁰				
		Permit Number	Application Date	Amount (acre-feet)	Maximum Diversion Rate ¹ (CFS)	Diversion Period
Anderson-Cottonwood ID	02_SA, 03_SA	Statement of use (S012208) for pre-1914 water right claim shows no diversion outside April through October irrigation season.				
Glenn-Colusa ID ⁵	08N_SA2, 08S_SA2	21101	02/18/1999	182,900 ⁹	1,200	Nov 1 – Mar 31
		29	03/03/1915	-	110	Mar 1 – Nov 1
Maxwell ID ²	08N_SA1, 08S_SA1	21004	05/30/1995	13,630	80 ⁴	Oct 1 – Mar 31
		5128	04/08/1936	-	63	Mar 15 – Nov 1
Pelger MWC	19_SA	20933	11/02/1994	5,000	60	Sep 15 – Mar 31
Princeton-Cordora-Glenn ID ²	08N_SA1	21132	11/19/1998	24,370	290 ⁸	Nov 1 – Mar 31
Provident ID ²	08N_SA1	21133	11/19/1998	26,747	483	Oct 1 – Mar 31
Reclamation District 108 ²	08_SA3	21274	05/13/03	36,000	240 ⁶	Nov 1 – Feb 1
		315	01/25/1917		180 ⁷	Feb 1 – Oct 31
		388	08/27/1919		500 ⁷	Feb 1 – Oct 31
		1885	12/26/1919		255 ⁷	May 1 – Oct 1
River Garden Farms	08_SA3	314	01/25/1917		32	Mar 1 – Oct 31
Meridian Farms WC	18_SA	591	09/10/1918		138	Mar 1 – Nov 1
Sutter MWC	19_SA	6189	06/16/1943		8	Mar 1 – Oct 31
		5510	09/12/1945		250	Jan 1 – Dec 31
		4354	03/29/1934		7	Mar 1 – Oct 31
		569	01/24/1919		41	Mar 1 – Oct 31
		420	01/03/1918		25	Mar 1 – Oct 31
		419	01/03/1918		117	Mar 1 – Oct 31
		287	02/01/1917		45	Mar 1 – Oct 31
Natomas Central MWC	22_SA1	19400	05/01/1978		168	Oct 1 – Apr 1
		15314	10/08/1965	2,627	14	Mar 1 – Jun 30 Sep 1 – Oct 31
		511	08/22/1918		38	Mar 1 – Oct 15

Notes:

¹ Diversion rates given in water right permits and licenses are rounded to the nearest CFS.

² Reclamation District 108 has a permit pending for 36,000 acre-feet.

³ The permit also specifies the Colusa Basin Drain as a point of diversion.

⁴ Permit 21004 allows a maximum diversion rate of 186 CFS from all points of diversion. Diversion from the Sacramento River is limited to 80 CFS.

⁵ Glenn-Colusa ID has a fixed 6-week shutdown period for canal maintenance spanning January and February. In CalSim 3.0, this period is modeled as January 1 through February 14.

⁶ No water shall be diverted when the flow in the Sacramento River below Wilkins Slough is less than 4,000 CFS during November and 3,500 CFS during the months of December through January, or minimum flows identified in the biological opinions for the long-term Operations of the CVP and SWP.

⁷ The maximum amount of water diverted under water right Permits 315, 388, and 1885, riparian claims, and CVP water (Contract No. 14-06-200-876A) shall not exceed 232,000 acre-feet from about February 1 through October 31 of each year. The maximum diversion rate under water right Permits 315, 388, and 1885 shall be less than 725 CFS.

⁸ The point of diversion under Permit 21132 includes the Colusa Basin Drain.

⁹ The maximum diversion for rice straw decomposition is limited to 150,000 acre-feet per year. The maximum quantity for irrigation is limited to 32,900 acre-feet per year.

¹⁰ Water right permits and licenses limited to diversion of water from April through October are not shown.

Key:

CFS = cubic feet per second, CVP = Central Valley Project, ID = Irrigation District, MWC = Mutual Water Company,

WC = Water Company

Quantification of riparian and appropriative water rights for all settlement contractors is beyond the current scope of the CalSim 3.0 hydrology development project. In general, no limits are imposed on simulated settlement contractor diversions outside the irrigation season, other than beneficial use. An exception is a few large settlement contracts for which water rights have been previously defined and published. Table 14-9 presents the appropriative water rights that have been included in CalSim 3.0 for these CVP settlement contractors for diversions from November 1 through March 31.

Llano Seco Rancho

Llano Seco Rancho consists of 18,400 acres adjacent to the Sacramento River. The land was formerly owned by the Parrott Investment Company. In 1991, 4,267 acres of the ranch were sold, 2,633 acres to USFWS and 1,633 acres to CDFW as components of the Federal Sacramento River National Wildlife Refuge (NWR) and the State Upper Butte Basin Wildlife Area, respectively. Additionally, 13,679 acres of conservation easements have been established. The ranch consists of a mosaic of wetlands, agricultural lands, riparian forest, oak woodlands, and native grasslands. Pacific Realty Associates (owners of M&T Chico Ranch) share the Parrott-Phelan Pumping Plant to divert water from the Sacramento River downstream from the mouth of Big Chico Creek. Llano Seco Rancho also receives water from Butte Creek.

CalSim 3.0 represents Llano Seco Rancho by demand unit 09_NA. No water right constraints have been developed for the demand unit. Diversions are constrained by the 150 CFS shared intake capacity and the downstream demand. Recent historical diversions are approximately 8,000 acre-feet per year.

City of West Sacramento

Historically, the City of West Sacramento has depended on groundwater to meet all M&I water demands. However, after 1988 and construction of the Bryte Bend WTP,¹⁷ the city increasingly used Sacramento River water to meet water demands. Groundwater production was discontinued in 1995. The city has a 1981 appropriative water right (Permit 18150) for diversion of surface water from the Sacramento River at its Bryte Bend intake structure. The water right permit is for 18,350 acre-feet per year, up to a maximum diversion rate of 62 CFS. However, the permit prohibits the diversion of water during the peak demand months of July and August. Term 91 applies to the water right. Term 91 conditions were triggered in 2014 and 2015. In these years the city relied primarily on its North Delta WA contract (described below) to meet its water demands.

In 2005, to obtain water during the summer months, the city entered into a 40-year contract (0-07-20-W0187) with Reclamation for the delivery of CVP water. This contract authorizes the city to divert up to 23,600 acre-feet per year from the Sacramento River of combined appropriative right water and CVP water. The contract does not restrict the maximum rate or the months of diversion from the river by the City. However, the contract specifies that 20 percent, 88 percent, 100 percent, and 100 percent of the water diverted during June, July, August, and September, respectively, must be CVP water. Under normal water supply conditions, the city has historically used approximately 5,200 acre-feet of CVP water. The water supply provided by the CVP contract is subject to Reclamation's shortage policy and may be reduced based on the average of

¹⁷ In June 2014, the water treatment plant was renamed the George Kristoff Water Treatment Plant.

the last 3 years of normal (i.e., 100 percent allocation) CVP water use. In 2015, the supply was reduced to 25 percent of the three-year average use.

Part of the City of West Sacramento lies in the service area of the North Delta WA.¹⁸ In 1981, the North Delta WA negotiated the *Contract between the California Department of Water Resources for the Assurance of a Dependable Water Supply of Suitable Quality*. This contract assures that the State, through both the CVP and SWP, will maintain a dependable water supply for M&I and agricultural purposes within the North Delta WA service area. During the 6-year drought from 1987 through 1992, CVP and SWP contractors received reduced deliveries. However, diversions from the Sacramento River by water users in the North Delta WA service area were not reduced, including diversions to the City of West Sacramento. During the 2014-2015 drought years, CVP M&I contractors received significantly reduced deliveries. Additionally, Term 91 conditions were triggered in March. In these years, the city relied primarily on its North Delta WA contract to meet its water demands.

In CalSim 3.0, the City of West Sacramento is represented by demand unit 21_PU. Although designated as a project (“P”) demand, for modeling purposes the city can be regarded as a non-project demand unit. In CalSim 3.0, the diversion to the City of West Sacramento is subject only to an annual contract limit of 23,600 acre-feet. No deficiencies are modeled because historically the city’s surface water supply appears to be assured under the North Delta WA contract.

City of Sacramento

The City of Sacramento diverts water from the American River between the Howe Avenue and J Street bridges to its Fairbairn WTP, and from the Sacramento River downstream from the American River confluence to its Sacramento River WTP. Surface water diversions are supplemented by groundwater pumping. Under a settlement agreement contract with Reclamation, the city’s maximum annual surface water diversions are limited to 326,800 acre-feet per year. Details of the city’s water rights and the settlement agreement with Reclamation are discussed under the American River sections of this chapter.

Sacramento County Water Agency

Sacramento County WA was formed in 1952 by a special legislative act of the State of California called the Sacramento County Water Agency Act. Under this Act, the agency may contract with federal and state agencies to purchase water and also construct and operate any required capital facilities.

Sacramento County WA provides water to areas in central Sacramento County, south of the American River under a capital funding zone known as “Zone 40.” The Zone 40 service area and the CalSim 3.0 demand units by which they are represented are as follows:¹⁹

- Zone 40 – North Service Area (26S_PU6)
- Zone 40 – Central Service Area (26S_PU6)

¹⁸ The northern boundary of the North Delta WA is along the Union Pacific Railroad tracks.

¹⁹ Sacramento County WA also provides water to two service areas located within the Delta: Hood; and East Walnut Grove. These are not represented explicitly in CalSim 3.0. However, consumptive use of water within these areas is part of net Delta consumptive use.

- Zone 40 – South Service Area (26S_PU4)

The Central Service Area (CSA) and the South Service Area (SSA), also known as the Laguna Vineyard system, uses a mix of surface water and groundwater. The CSA is supplied with surface water from the Freeport Regional Water Project, which is treated at the Vineyard WTP.²⁰ Sacramento County WA has signed a wheeling agreement with the City of Sacramento to provide treatment and conveyance of water through the City of Sacramento treatment and distribution facilities to the SSA. The Northern Service Area (NSA), also known as the Mather Sunrise system, is dependent on groundwater. The NSA will not receive surface water until the NSA pipeline, which connects the Vineyard WTP to the NSA distribution system, is constructed. The timing of the construction of the NSA pipeline depends on future water demands in the NSA.

Sacramento County WA also provides water to four service areas north of the American River. These service areas and the CalSim 3.0 demand units by which they are represented, are as follows:

- Metro Air Park (22_NU)
- Arden Park Vista (26N_NU4)
- Northgate 880 (22_NU)
- Southwest Track

The Southwest Tract is small and is not considered further. Zone 41 is the retail supplier that operates and maintains all of the service areas located within Sacramento County WA.²¹ The following sections describe water supplies available to Sacramento County WA for diversion at the City of Sacramento and Freeport intakes.

Appropriative Water Rights

In 2008, the State Water Board approved Sacramento County WA's appropriative water right permit application to divert water from the Sacramento River at Freeport (Permit 21209). The place of use is Sacramento County WA's Zone 40 (NSA, CSA, and SSA). The maximum diversion rate is 132 CFS, with an annual maximum of 71,000 acre-feet per year. The permit is subject to prior rights, and the State Water Board warns that in any year of water scarcity, the authorized season of diversion may be reduced or completely eliminated by order of State Water Board. The permit also is subject to standard Term 91. Water under this permit is considered "intermittent water," which is typically available during the winter months of normal or wet years. For CalSim 3.0, this water is diverted only in months when the Delta is in excess conditions. During excess water conditions, sufficient water is available to meet all beneficial

²⁰ The Freeport diversion structure and the Freeport Regional Water Authority pipeline were completed

The Vineyard WTP, with an initial capacity of 50 mgd, was completed in 2011.

²¹ Zone 40 was created by Sacramento County WA in 1985 for the development of surface water and groundwater supplies. After construction of Zone 40 water facilities were completed, the facilities were granted over to Zone 41 for long-term operations and maintenance. Water right permits and contracts may specify Zone 40 as the place of use. For modeling purposes, this is equivalent to the North Service Area, Central Service Area, and South Service Area.

needs and the CVP and SWP are not required to make supplemental releases from reservoir storage.

CVP Water

CVP water available to Sacramento County WA consists of two assignments from SMUD and Public Law 101-154 water, as described below.

SMUD Assignment 1

Under the terms of a three-party agreement (Sacramento County WA, SMUD, and the City of Sacramento), the City of Sacramento provides water to SMUD for use at two of SMUD's cogeneration facilities located in the City's American River place of use. SMUD, in return, has assigned 15,000 acre-feet per year of SMUD's CVP contract water to Sacramento County WA.

SMUD Assignment 2

SMUD has assigned a second amount of CVP contract water to Sacramento County WA for up to 15,000 acre-feet per year. In return, Sacramento County WA is obligated to construct groundwater facilities necessary to supply water to meet SMUD's dry year demands.

Public Law 101-514

Section 206 of Public Law 101-514 provided up to 50,000 acre-feet per year of water in the CVP American River Division for use by Sacramento County WA, San Juan WD, and El Dorado County WA. This water is commonly referred to as "Fazio" water. In 1999, Sacramento County WA signed a contract with Reclamation for delivery of 22,000 acre-feet for M&I uses in accordance with Public Law 101-514. This contract provides a permanent water supply to Zone 40 of 15,000 acre-feet per year, which is currently used in the SSA and 7,000 acre-feet per year provided to the City of Folsom through a subcontract between Sacramento County WA and the city. Water for the City of Folsom is restricted for use in an area located in the southeastern quadrant of the city. CVP water used in Sacramento County WA's SSA is treated at the City of Sacramento's Sacramento River WTP, wheeled through the city's distribution system, and delivered through the Franklin intertie. The capacity of the Franklin intertie is 11 mgd, or approximately 12,320 acre-feet per year. The unused portion of the Fazio water and the SMUD 1 and SMUD 2 assignments are available for diversion at the Freeport intake and treatment at the Vineyard WTP.

Wholesale Agreements

Sacramento County WA's Water Forum purveyor-specific agreement (PSA) directs Sacramento County WA to enter into an agreement with the City of Sacramento whereby the City of Sacramento will sell surface water to Sacramento County WA for use in the portion Zone 40 that lies within the City of Sacramento's American River place of use. The amount of water required to serve the place of use area is estimated to be 9,300 acre-feet per year.

In 2004, Sacramento County WA, Sacramento County, and the City of Sacramento approved an agreement for wholesale and/or wheeling water service for the Sacramento International Airport and Metro Air Park. This water supply is currently not represented in CalSim 3.0.

Aerojet

Aerojet has legal responsibility for groundwater contamination in Sacramento County and provides replacement water from its extraction and treatment of contaminated groundwater at several groundwater extraction and treatment (GET) facilities. Treated water is discharged into several tributaries of the American River, including Buffalo Creek under NPDES. In 2010, Sacramento County WA entered into an agreement with Aerojet to transfer ownership of 8,900 acre-feet of remediated groundwater (SCWA 2011). Aerojet water is taken before CVP water. This water is not currently represented in CalSim 3.0.

Water Forum

The availability of CVP water supply is subject to Water Forum Agreement dry year restrictions.

East Bay Municipal Utility District

EBMUD undertook the Freeport Regional Water Project in partnership with Sacramento County WA. The project enables EBMUD to take delivery of CVP water to meet a portion of its drought year water demands. The CVP contract allows EBMUD to divert up to 133,000 acre-feet of American River water each year with a total not to exceed 165,000 acre-feet in 3 consecutive years. This diversion can only occur in drought years when EBMUD's total system storage is forecast to be less than 500,000 acre-feet. The maximum diversion rate is 100 mgd.

Davis-Woodland Water Supply Project

Under a joint powers agreement (JPA), the City of Davis and the City of Woodland, in coordination with UC Davis and Yolo County FC&WCD, has developed a regional treated surface water supply (Woodland- Davis, 2013). The point of diversion is adjacent to the RD 2035 diversion on the Sacramento River at RM 74. The CalSim 3.0 network schematic indicates the proposed diversion. However, the Davis-Woodland Water Supply Project is not simulated at the existing level of development.

State Water Board Permit Number 20281

In 1994, Yolo County FC&WCD filed a water right application for diversion of up to 45,000 acre-feet per year from the Sacramento River for use by the Cities of Davis and Woodland. In 2001, this application was assigned to the Cities of Davis and Woodland and UC Davis. In 2010, the application was assigned to the JPA: known as the Woodland-Davis Clean WA. In 2011, the State Water Board issued water right Permit 20281 for diversion of up to 45,000 acre-feet per year and up to 80.1 CFS for a 30-day average. The permit is subject to Term 91.

Water Transfer

The Conaway Ranch, owned by the Conaway Preservation Group, covers 17,300 acres north of Interstate 80 (I-80), within and west of the Yolo Bypass. The Conaway Preservation Group owns pre-1914 appropriative water rights for diversion from the Sacramento River. Additionally, the Conaway Preservation Group holds a settlement contract (14-06-200-7422A-R-1) with Reclamation to divert up to 50,862 acre-feet during the irrigation season from the Sacramento River.

In 2010, the Conaway Conservancy Group signed an agreement with the Woodland-Davis Clean WA for a permanent transfer of 10,000 acre-feet of water, starting January 2016, to be made available for the Davis-Woodland Water Supply Project. The Conaway Conservancy Group proposes to permanently assign 10,000 acre-feet of CVP base supply in the following monthly

amounts: June – 2,500 acre-feet; July – 3,500 acre-feet; August – 500 acre-feet; and September 3,500 acre-feet. These amounts would be subject to reductions in Shasta critical years.

Other Diverters

Most surface water diversions from the Sacramento River for agricultural water use are made by CVP settlement and water service contractors. A notable exception is Llano Seco Rancho, represented by demand unit 09_NA. Diversions from the Sacramento River by senior water right holders who have not signed settlement agreements with Reclamation are not well defined, and records of their historical diversions are incomplete or unavailable. An initial assessment of agricultural diversions from the Sacramento River by non-project water users was made based on data published in discontinued DWR Bulletin Series 23 (DWR, 1924 – 1962) and Series 130 (DWR, 1963 – 1975, 1975). This assessment was later revised using a land-use-based approach. DWR's county land-use surveys were used to identify land that was contiguous with the Sacramento River and within 3 miles of the river centerline. A subset of these lands was identified as cropland that is irrigated by surface water or mixed surface water and groundwater and lies outside any water districts or irrigation districts. Surrogate annual water rights for these lands were subsequently calculated assuming a 3.0-foot-per-acre water demand. Results are summarized in Table 14-10.

Table 14-10. Non-Project Agricultural Diversions from Sacramento River

Demand Unit	Diversion Arc	River Reach	Bank	Annual Diversion ³ (acre-feet)
02_NA	D_SAC281_02_NA	Keswick to Bend Bridge	Right	1,000
04_NA ¹	D_SAC224_04_NA	Bend Bridge to Glenn-Colusa ID Intake	Right	1,000
08N_NA	D_SAC185_08N_NA	Glenn-Colusa ID Intake to RM 154	Right	14,000
08S_NA1	D_SAC146_08S_NA1	RM 154 to RM 134	Right	8,000
08S_NA2	D_SAC129_08S_NA2	RM 134 to Colusa Basin Drain	Right	21,000
21_NA	D_SAC081_21_NA	Colusa Basin Drain to Sacramento Bypass	Right	13,000
03_NA	D_SAC273_03_NA	Keswick to Bend Bridge	Left	5,000
05_NA ¹	D_SAC240_05_NA	Bend Bridge to Big Chico Creek	Left	7,000
09_NA	D_SAC185_09_NA	Big Chico Creek to Butte Slough	Left	14,000
18_NA	D_SAC136_18_NA	Butte Slough to Tisdale Weir	Left	5,000
19_SA ²	D_SAC109_19_NA	Tisdale Weir to Feather River	Left	20,000
22_NA	D_SAC075_22_NA	Feather River to American River	Left	1,000
Total				110,000

Notes:

¹ Demand units 04_NA and 05_NA include a mix of non-project water users and CVP settlement contractors. Diversions by CVP settlement contractors in these WBAs were considered too small to warrant modeling as an independent demand unit.

² Demand unit 19_SA include a mix of non-project water users and CVP settlement contractors. Diversions by non-project water users in this WBA were considered too small to warrant modeling as an independent demand unit.

³ Annual diversion amounts are very approximate and are an initial attempt to account for non-project agricultural diversions from the Sacramento River in CalSim 3.0.

Key:

CVP = Central Valley Project

ID = Irrigation District

RM = river mile

WBA = Water Budget Area

Lower Feather River

In addition to water districts that have signed settlement agreements with DWR, many individual water right holders divert from the lower Feather River. For CalSim 3.0, surface water diversions to these individuals are based on estimates of irrigated riparian lands, beneficial use, and appropriative water rights (Sergeant, 2008). The City of Yuba City is the only public agency that holds water rights and contracts for diversion of Feather River water downstream from Oroville Dam and is not part of a settlement agreement or contract with DWR.

Yuba City

Before 1969, Yuba City depended on local groundwater for all M&I water supplies. However, because of poor water quality, the city constructed a surface water treatment plant, which was completed in 1969. Currently, approximately 20 percent of the city's water demand is met with groundwater (Yuba City, 2011). Yuba City's existing surface water sources include two appropriative water rights (Permits 14045 and 18558), a contract with Yuba County WD, and long-term water supply contract with DWR for diversions from the Feather River. These are discussed in the following sections.

State Water Board Permit Number 14045

In 1964, Yuba City obtained an appropriate right to divert 15.6 CFS year-round from the Feather River except during the months of July and August, pursuant to Permit 14045. Outside the summer months, this permit is the basis of the city's supplies. In 1973, State Water Board limited the city to 6,500 acre-feet per year because the full entitlement was not being used.

State Water Board Permit Number 18558

In 1978, Yuba City obtained a second water right to divert water from the Feather River, allowing diversion of 21 CFS, except during July, August, and September, under Permit 18558. This permit has a lower priority and more restrictions than Permit 14045 and is subject to Term 91 curtailments. During normal runoff years, Permit 18558 diversion is curtailed at the end of June. During below-normal runoff years Permit 18558 is curtailed in mid-May. Permit 18558 limits annual withdrawal to 9,000 acre-feet per year.

Yuba County Water District

In 1965, Yuba City negotiated a contract for water supply with Yuba County WD. Subsequently, amendments were made to the contract in 1970, 1980, and 2010. The agreement provides for direct diversion from the Feather River from April through October of up to 4,500 acre-feet through 2035 and provides the city a base summer water supply.

Department of Water Resources, State Water Project

In 1963, Yuba City signed a contract with DWR for delivery of SWP water. The contract remains in force through 2035. The maximum allowable allocation (full Table A) is 9,600 acre-feet per year. This contract is presently used to supplement Yuba County WD water during the months of July and August. From 2001 through 2005, water drawn on this contract has averaged approximately 1,400 acre-feet per year or approximately 15 percent of the full allocation. Yuba City has used the Turnback Pool Program since 1999, which allows allocated Table A water, not used by the city, to be sold to other long-term SWP contractors.

Bear River

Major diverters from the Bear River include PG&E, Nevada Irrigation District, Placer County Water Agency, South Sutter Water District, and Camp Far West Irrigation District.

South Sutter Water District

South Sutter Water District holds five post-1914 water rights. Two water rights are for direct diversion and diversion to storage from the Bear River to Camp Far West Reservoir. Three water rights are for diversion of natural flows in Coon Creek, Yankee Slough, East Side Canal, Markham Ravine and Auburn Ravine. The district also holds a water right (Permit 18360, Application 26162) for appropriation from the Bear River for power purposes.

Pursuant to an agreement between Camp Far West Irrigation District and the district during the construction of the dam and subsequent enlargement of Camp Far West Reservoir, Camp Far West Irrigation District is entitled to the first 13,000 acre-feet released from the reservoir each year to satisfy their senior water rights on the Bear River. Pursuant to the Bay-Delta Settlement Agreement between the District, Camp Far West Irrigation District, and DWR, the district releases 4,400 acre-feet during dry or critical years.

State Water Board License Number 11120, Application 10221

License 11120 provides for a direct diversion of 250 CFS from March 1-June 30 and September 1-October 31. It also provides for the diversion to storage of 40,000 acre-feet to be collected from October 1 to June 30. The water right has a priority of 1941.

State Water Board License Number 11118, Application 14804

License 11120 provides for a direct diversion of 330 CFS from March 1-June 30. It also provides for the diversion to storage of 58,370 acre-feet to be collected from October 1 to June 30. The water right has a priority of 1952. Pursuant to License 1118, the District maintains a release of 10 CFS below the diversion dam from July through March of the subsequent year and 25 CFS during the months of April through June.

Lower American River

Many water users rely on Folsom Lake, Folsom South Canal, and the lower American River for water supplies. Water agencies that hold contracts with Reclamation for delivery of CVP water include Placer County WA, San Juan WD, El Dorado ID, SMUD, Sacramento County WA, and the Cities of Folsom and Roseville. These agencies are represented in CalSim 3.0 by individual demand units, which are designated by the suffix “_PUx” to indicate delivery of the project (i.e., CVP). Non-project water may also be delivered to project demand units. Additionally, four major users exclusively divert non-project water and are usually designated by demand units with the suffix “_NUx” to indicate delivery of non-project water.²² These water users include the City of Sacramento, Carmichael WD, Folsom Prison, and the California Department of Parks and Recreation.

Surface water diversions from Folsom Lake, Folsom South Canal, and the lower American River are constrained by a complex set of water rights, water contracts, and agreements. Agreements

²² CalSim 3.0 combines Folsom Prison and the City of Folsom into a single demand unit designated with the suffix “PU.” It is anticipated that future revisions to the model will disaggregate these two demand into a project and non-project demand. California Parks and Recreation also is designated using the suffix “PU.” This is an error inherited from CalSim II that will be corrected in future model revisions.

that limit surface water diversions in drier years include the Water Forum Agreement of 2000. The following sections discuss the Water Forum Agreement, followed by a discussion of water rights and water contracts held by the various entities that divert from the American River. This section concludes with a summary of how these water rights, contracts, and agreements are represented in CalSim 3.0.

Water Forum Agreement

The Water Forum is a diverse group of water managers, local governments, business and agricultural leaders, environmentalists, and citizen groups that, in 1995, joined efforts to devise a plan for water supply in Sacramento County. The Water Forum established two co-equal goals: to “provide a reliable and safe water supply for the region’s economic health and planned development to the year 2030;” and to “preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.”²³

Most of the public water purveyors within Sacramento County are signatories of the Water Forum Agreement Memorandum of Understanding (MOU) of 2000. This agreement includes PSAs that detail each purveyor’s Water Forum commitments. To enable the region to achieve its goals, the Water Forum Agreement describes how the region will address groundwater management, surface water diversions, dry and critical year water supplies, and water conservation goals. All of these activities are balanced with the need to protect the lower American River.

The Water Forum PSAs establish actions to be taken during dry and critical (or driest) years, limiting diversions from the American River to help preserve the ecosystem of the river. The definition of Water Forum water year type is based on the unimpaired inflow to Folsom Lake from March through November, as follows:

- **Wet year** – March to November unimpaired inflow to Folsom is greater than 1,600,000 acre-feet.
- **Average year** – March to November unimpaired inflow is between 950,000 and 1,600,000 acre-feet.
- **Dry year** – March to November unimpaired inflow is between 400,000 and 950,000 acre-feet.
- **Driest (conference) year** – March to November unimpaired inflow is less than 400,000 acre-feet.

Table 14-11 is based on the Water Forum Agreement and summarizes maximum annual diversion amounts for water purveyors who are signatory to the agreement.

²³ Water Forum Agreement, January 2000

Table 14-11. Water Forum Purveyor-Specific Agreements

Water Supplier or Organization	Allowable Diversions (acre-feet, unless indicated otherwise)			
	1995 Baseline ¹	2030 Diversion Wet and Average Years	2030 Diversions Drier Years	2030 Diversion Driest Years ²
American River Diversions – Upstream from Nimbus				
City of Folsom	20,000 ¹⁹	34,000 ³	34,000 – 22,000 ⁴	20,000 ⁵
Northridge WD ¹⁷	0	29,000 ⁹	0	0
Placer County WA ^{6,7}	8,500	35,500 ³	35,500 ^{4,20}	35 ²⁰
City of Roseville ⁷	19,800	54,900	54,900 – 39,800 ^{4,22}	39,800 ^{20,22}
San Juan WD and Sacramento Co. Consortium	44,200 ⁸	57,200 ³	57,200 – 44,200 ⁴	44,200
San Juan WD Placer County	10,000	25,000 ³	25,000 – 10,000 ⁴	10,000
South Sacramento County Agriculture	0	35,000 ⁹	0	0
Sacramento Municipal Utility District	15,000 ¹¹	30,000 ³	30,000 – 1,000 ⁴	15,000
American River Diversions – Between Nimbus and Mouth				
Carmichael WD ¹⁸	12,000	12,000	12,000	12,000
City of Sacramento	50,000	310 CFS ^{12,13}	90,000 ¹⁵	50,000
Sacramento River Diversions¹⁴				
City of Sacramento	45,000	290 CFS ¹³	290 CFS ¹³	290 CFS ¹³
County of Sacramento	0	<78,000 ¹⁶	< 78,000 ¹⁶	< 78,000 ¹⁶
Placer County WA ⁶	0	35,000	35,000	35,000
Natomas Central MWC in Sacramento County	53,000	45,600	45,600	45,600

Notes:

¹ Baseline: Baseline means the historical maximum amount of water that suppliers diverted from the American River in any one year through 1995 or, in certain appropriate instances, other amounts specified in purveyor's specific agreement. Clarifications pertaining to the San Juan WD, SMUD, and the City of Folsom are noted in footnotes 8, 11, and 19.

² Driest Years (i.e., Conference Years): Years when the projected March through November unimpaired inflow to Folsom Reservoir is less than 400,000 acre-feet. Conference years are those years that require diverters and others to meet and confer on how best to meet demands and protect the American River.

³ Wet and Average Years: As it applies to these diverters, years when the projected March through November unimpaired inflow to Folsom Reservoir is greater than 950,000 acre-feet.

⁴ Drier Years: As it applies to these diverters, years when the projected March through November unimpaired inflow to Folsom Reservoir is less than 950,000 acre-feet.

⁵ In Conference Years, the City of Folsom would reduce diversions by an additional 2,000 acre-feet below its baseline to 18,000 acre-feet through additional conservation to achieve recreational benefits to Folsom reservoir and fishery benefits to the lower American River.

⁶ Placer County WA would receive support for an American River diversion of 35,500 acre-feet (8,500 acre-feet existing and 27,000 acre-feet additional) in wetter and average years and a new Sacramento/Feather Diversion of 35,000 acre-feet. Placer County WA is willing to exchange 35,000 acre-feet of its American River water for Sacramento River and/or Feather River water provided the terms of such exchange do not result in any diminution of Placer County WA's water supply or an increased cost to Placer County WA.

⁷ For these suppliers, some or all of their water supply diverted from the American River or Folsom Reservoir in drier and driest years could be replaced with water released from the Middle Fork Project Reservoirs by reoperating those reservoirs. Reoperation of the MFP reservoirs causes the reservoirs to be drawn down below historical operational minimum pool volumes.

⁸ The baseline for San Joaquin WD and its wholesale service area within Sacramento County is the full amount of its entitlements (CVP contract and water rights), which they exercised in 1995.

⁹ Wet/Ave Years: As it applies to these diverters, years when the projected March through November unimpaired inflow to Folsom Reservoir is greater than 1,600,000 acre-feet.

¹⁰ Drier Years: As it applies to these diverters, years when the projected March through November unimpaired inflow to Folsom Reservoir is less than 1,600,000 acre-feet.

¹¹ The baseline for SMUD is the 1995 diversion amount, which reflects the shutdown of Rancho Seco Power Plant.

¹² Wet and Average Years: As it applies to the City of Sacramento, time periods when the flows bypassing the E. A. Fairbairn Water Treatment Plant diversion exceed the "Hodge flows."

¹³ For modeling purposes, it is assumed that the City of Sacramento's total annual diversions from the American and Sacramento rivers in 2030 would be 130,600 acre-feet for use within the city limits.

Table 14-11. Water Forum Purveyor-Specific Agreements (contd.)

- ¹⁴ As it applies to these diverters, there is no Water Forum limitation to diversions from the Sacramento River.
- ¹⁵ Drier Years: As it applies to the City of Sacramento, time periods when flows bypassing the city's E. A. Fairbairn Water Treatment Plant diversion do not exceed the "Hodge flows." Within its existing capacity, the city can divert from the American River 155 CFS in June, July, and August; 120 CFS in January through May and September; and 100 CFS in October through December.
- ¹⁶ The total for the County of Sacramento (78,000 acre-feet) represents 45,000 acre-feet of firm entitlement and 33,000 acre-feet of intermittent water. The intermittent supply is subject to reduction in the drier and driest years. To reduce reliance on intermittent surface water, Sacramento County intends to pursue additional firm supplies.
- ¹⁷ Northridge WD and other signatories have agreed that for an interim 10-year period, Northridge WD would be able to divert Placer County WA water in years when the projected March through November unimpaired inflow to Folsom Reservoir is greater than 950,000 acre-feet. After the 10-year period, unless State Water Board issues a subsequent order, Northridge WD will divert up to 29,000 acre-feet of water from Folsom Reservoir under the Northridge WD - Placer County WA contract only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre-feet.
- ¹⁸ Carmichael WD will divert and use up to its license amount of 14,000 acre-feet. By 2030, it is most likely that water demand for the district will be reduced to its historical baseline level of 12,000 acre-feet by implementation of Urban Water Conservation Best Management Practices. Signatories to the Water Forum Agreement acknowledge and agree that Carmichael WD shall not relinquish control of or otherwise abandon the right to any quantity it has foregone delivery and/or diversion of under this agreement, and shall retain the right (if any) to transfer that water for other beneficial uses, after that water has served its purpose of assisting in implementing the Improved Pattern of Fishery Flow Releases, for diversion or rediversion at, near, or downstream from the confluence of the lower American River and Sacramento River. The signatories also recognize that any such transfer of water by Carmichael WD must be in accordance with applicable provisions of Federal and State law.
- ¹⁹ This is an agreed-upon amount that is within the historical diversion data and is equivalent to Folsom's treatment capacity, as of 1999.
- ²⁰ This requires 27,000 acre-feet of replacement water to the river as part of a dry year action, as provided in Placer County WA's specific agreement. In drier years this requires up to 27,000 acre-feet, the drier the year, the more water would be required. This is contingent on Placer County WA's ability to sell this water to the Department of the Interior to meet Anadromous Fishery Restoration Program goals for the lower American River or to other parties for their use after it flows down the lower American River.
- ²¹ Remaining issues that are being negotiated are (1) environmentalists' support for Placer County WA pumps at Auburn, (2) how water conservation Best Management Practice 5 (Large Landscape Water Audits and Incentives for Commercial, Industrial, Institutional and Irrigation Accounts) will be implemented, and (3) environmentalists' support for conditions related to release of replacement water in drier and driest years.
- ²² This requires 20,000 acre-feet of replacement water to the river as part of a dry year action, as provided in Placer County WA's specific agreement. In drier years, this requires up to 20,000 acre-feet, the drier the year, the more water would be required. This is contingent on Placer County WA's ability to sell this water to the Department of the Interior to meet Anadromous Fishery Restoration Program goals for the lower American River or to other parties for their use after it flows down the lower American River.

Key:

CVP = Central Valley Project

MWC = Mutual Water Company

SMUD = Sacramento Municipal Utilities District

WA = Water Agency

WD = Water District

Placer County Water Agency

Placer County WA was created in 1957 by a special act of the California State Legislature to develop and operate major water facilities in Placer County. The agency provides both raw and treated water to wholesale and retail customers throughout the county. The agency's service area is divided into five zones, as follows (MWH, 2003):

- Zone 1 is the largest of Placer County WA's five zones and receives water from both the Bear River and North Fork of the American River. This system provides water service to the communities of Auburn, Bowman, Ophir, Newcastle, Penryn, Loomis, Rocklin, and Lincoln.
- Zone 2 provides retail water services to a small urban area southwest of the City of Roseville. The zone uses only groundwater. For modeling purposes, Zone 2 is aggregated with Zone 1.

- Zone 3 serves the City of Colfax and communities along the Interstate 80 (I-80) corridor extending from Bowman to Alta. Water is purchased from Pacific Gas and Electric (PG&E) and conveyed from PG&E's Drum-Spaulding hydroelectric system to Placer County WA's Boardman Canal.
- Zone 4 serves the community of Martis Valley near Truckee. Water supplies are entirely from groundwater. The zone lies outside the CalSim 3.0 domain and therefore not represented in the model.
- Zone 5 covers an agricultural area in western Placer County. It was created to reduce reliance on groundwater supplies by providing surface water for agriculture. Raw water for agricultural interests in Zone 5 is delivered via the Auburn Ravine. This water is either released to the ravine from PG&E's Wise Canal or delivered by Placer County WA's American River Pump Station through the Auburn Tunnel.

Zone 1 is subdivided into two service areas to delineate the higher elevation service areas of the City of Auburn and surrounding communities from the remaining lower elevation areas. Upper Zone 1 can only be supplied with PG&E water originating in the Yuba and Bear watersheds and delivered to Placer County WA by PG&E through the Bear River Canal, and its downstream extensions: Wise Canal and South Canal.

Lower Zone 1 consists of the watershed below Auburn, including the communities of Newcastle, Penryn, and a portion of Granite Bay, as well as the Cities of Rocklin, and Lincoln, and the town of Loomis. Placer County WA provides retail services to most of these communities and provides wholesale service to the City of Lincoln, California American WC, and small water associations. Placer County WA also provides untreated water service to Christian Valley Park CSD, which operates its own water treatment plant.

The primary water source for lower Zone 1 is PG&E contract water delivered from the Drum-Spaulding hydroelectric system, through the Bear River Canal. Additional water supplies are diverted under the agency's water rights on the North Fork American River at the American River Pump Station. Historically, Placer County WA has also purchased surplus water from the South Sutter WD for agricultural customers in Zone 5. In addition, Placer County WA diverts a limited amount of surface water from small creeks under pre-1914 water rights. These minor stream diversions are not represented in CalSim 3.0.

Central Valley Project Water

In 1970, Placer County WA signed a contract (14-06-200-5082A) with Reclamation for the delivery of 117,000 acre-feet, in anticipation of the construction of Auburn Dam. The CVP water was to be delivered at Auburn Dam or other mutually agreed location(s). Construction of Auburn Dam was suspended in 1977 because of concerns relating to seismic activity. The subsequent 1988 amendatory contract changed the authorized point of diversion to Folsom Dam or other mutually agreed location(s). The amendatory contract limited diversions before the completion of Auburn Dam to 35,000 acre-feet per year, and required the agency to fully use its Middle Fork Project water supply, to the extent that is available each year, before receiving and using its CVP supply.

Through the CVP long-term contract renewal effort, Placer County WA completed a negotiation with Reclamation to further amend its CVP water service contract. The resulting 2002 amendatory contract eliminated requirements on the agency to fully use its Middle Fork Project supply before using its CVP supply.²⁴ The existing interim contract is awaiting completion of environmental documents before a long-term renewal contract can be signed. Water is to be used for M&I purposes only.

In 2008, the State Water Board revoked Reclamation's right to appropriate water in connection with Auburn Dam and Reservoir (Order WR 2008-0045); therefore, Placer County WA must divert its CVP water from Folsom Lake.²⁵ Placer County WA has not used its CVP supply since its CVP water service contract was first signed in 1970. Currently, CVP water is not available to the agency because it does not have facilities that are capable of conveying CVP water from Folsom Lake to Zone 1. Placer County WA is currently engaged in negotiations with the City of Roseville and other regional entities to potentially use existing facilities to divert and deliver the agency's CVP project water supplies (PCWA, 2016). Placer County WA also has been pursuing the expansion of the allowable CVP service area to include most of western Placer County and portions of northern Sacramento County. This may allow Placer County WA to deliver CVP water to the City of Roseville and San Juan WD, as well as Sacramento Suburban WD in satisfaction of its contractual obligations (PCWA, 2011).

Middle Fork Project

Placer County WA's Middle Fork Project, completed in 1967, provides water supplies to Placer County WA wholesale customers. Placer County WA is authorized to divert its Middle Fork Project water at the Auburn Dam site on the North Fork American River and at Folsom Dam. Placer County WA may use water under its permitted water rights in western Placer County, as well as portions of Sacramento County. Placer County WA has signed an agreement with Reclamation limiting its diversions under these permitted rights to 120,000 acre-feet per year. Currently, diversions at Folsom Dam are mainly for the agency's water sales with San Juan WD for up to 25,000 acre-feet per year, with the City of Roseville for up to 30,000 acre-feet per year, and with Sacramento Suburban WD for up to 29,000 acre-feet per year.

Placer County WA completed construction of its American River Pump Station in 2008. The agency plans to expand the use of Middle Fork Project water diverted at Auburn to meet increasing treated water needs in the Zone 1 service area following construction of the proposed Ophir WTP.

Appropriative Water Rights

Placer County WA holds four pre-1914 appropriative water rights for diversion of water from various small creeks in western Placer County. Based on diversion records for the past 10 years, Placer County WA has diverted an average of 3,400 acre-feet per year (PCWA, 2011). These water rights are not explicitly represented in CalSim 3.0. Simulated water supplies to Placer County WA Zone 5 include unconstrained access to runoff and streamflows in western Placer County.

²⁴ The contract was further amended in 2002 to provide for a potential point of diversion on the Sacramento River.

²⁵ The American River Pump Station is not currently an authorized point of diversion of CVP water under the water right used by Reclamation for CVP operations.

South Sutter Water District

Placer County WA has signed a surplus water supply contract with South Sutter WD. This water is made available because South Sutter WD buys water from Nevada ID in excess of its current needs. Placer County WA's contract with South Sutter WD provides that South Sutter WD will purchase water from Nevada ID in excess of South Sutter WD's needs in an amount requested by Placer County WA, which shall not exceed 12,000 acre-feet per year. The water is to be made available for irrigation purposes in Zone 5. Placer County WA last took delivery of water under this contract in 2006 (PCWA, 2011). This water contract is not modeled in CalSim 3.0.

Water Forum Agreement

The PSA for Placer County WA limits annual diversions of Middle Fork Project water at the Auburn Dam site to 35,500 acre-feet. In drier and driest years, when Folsom Reservoir inflow is less than 950,000 acre-feet, Placer County WA agreed to additional releases of water from Middle Fork Project reservoirs to mitigate for additional diversions at its Auburn and Folsom Lake points of diversion above the Water Forum Agreement baseline volumes.

El Dorado Irrigation District

El Dorado ID provides a mix of CVP water and water rights water to two residential areas known as the Lake Hills Estates and El Dorado Hills. Water is diverted at the district's Folsom Lake raw water pumping plant, but diversions are limited by the 26 mgd capacity of the El Dorado Hills WTP (approximately equivalent to 29,000 acre-feet per year). El Dorado ID's service area is external to the CalSim 3.0 WBA domain, but is represented in the model by external demand unit "ELDID."

Appropriative Water Rights

El Dorado ID holds water rights associated with Sly Park Dam and Jenkinson Lake. The dam was constructed as part of the CVP Sly Park Unit in 1955, but is now owned and operated by the district. The district's annual water right is 33,400 acre-feet, although the average annual yield of the reservoir is approximately 23,000 acre-feet (EID, 2011). The district also holds water rights associated with Federal Energy Regulatory Commission (FERC) Project 184, under which water is diverted from the South Fork of the American River near Kyburz. Historically, Project 184 water was used for power generation and other nonconsumptive uses. However, in 2001, the State Water Board issued Water Right Order 2001-22, granting El Dorado ID and El Dorado County WA consumptive water rights to 17,000 acre-feet (Permit 21112). In 2016, the district acquired a Warren Act Contract with Reclamation for use of unused storage in Folsom Lake and diversion of up to 17,000 acre-feet at its Folsom Lake raw water pumping plant.

The district also holds pre-1914 water rights for diversions from Weber Creek, Slab Creek, and Hangtown Creek that provide approximately 4,560 acre-feet of water in a normal year. Since 2003, the district has rediverted this water at Folsom Lake under a series of temporary Warren Act contracts with Reclamation. The district recently signed a permanent Warren Act Contract (06-WC-20-3315) with Reclamation for diversion of this water at its Folsom Lake raw water pumping plant that took effect in March 2011.

Central Valley Project Water

Section 206 of Public Law 101-514, passed by Congress in 1990, directed Reclamation to provide up to 50,000 acre-feet per year of water in the American River Division of the CVP for

use by Sacramento County WA, San Juan WD, and El Dorado County WA. This water is commonly referred to as “Fazio” water. Under Public Law 101-514, up to 15,000 acre-feet per year of Fazio water are available to El Dorado County WA. The agency is currently working with Reclamation to secure a contract for diversion of the Fazio water from Folsom Lake or from the American River upstream from Folsom Lake through exchange agreements. This water would be transferred through subcontracts to El Dorado ID and Georgetown Divide Public Utility District (PUD). Ongoing environmental analyses are evaluating impacts and benefits of this proposed contract and the appropriate allocation of water between the two agencies (Reclamation, 2009). Contracts for the delivery of CVP water will be signed after completion of the environmental documentation.²⁶ Diversions by El Dorado ID would occur at its existing water supply intake on the south arm of Folsom Lake and conveyed to the El Dorado Hills WTP. Diversions to Georgetown Divide PUD would occur through an exchange agreement with an upstream water purveyor, which also holds current CVP diversion rights from Folsom Lake. Georgetown Divide PUD would exchange its new CVP contract water with this purveyor for a water supply (likely a water right) more readily accessible to the PUD at some upstream location. For example, Placer County WA’s American River Pump Station could serve as the new point of diversion. Georgetown Divide PUD would receive Middle Fork Project water in return for relinquishing its CVP water at Folsom Lake. This CVP water would be available to Placer County WA and its contractors.

In 1958 and 1964, El Dorado ID entered into contracts (14-06-200-7312A and 14-06-200-1357A) to obtain CVP water from Folsom Lake. These contracts are for a supply to the Lakes Hills Estates for up to 50 acre-feet per year and to El Dorado Hills for up to 7,500 acre-feet per year, both for M&I purposes.²⁷ In 2006, the two contracts were consolidated into a single contract (14-06-200-1357A) and renewed for the period of 2006 through 2045.

Georgetown Divide PUD

Georgetown PUD is located in the upper American River watershed and is represented in the CalSim 3.0 upper American River module that is currently under development. The district owns and operates Stumpy Meadows Reservoir located on Pilot Creek. Water is diverted 2 miles downstream from Stumpy Meadows Dam. Georgetown PUD holds a pre-1914 water right for direct diversion and an appropriative water right for diversion to storage

City of Folsom and Folsom Prison

The City of Folsom lies adjacent to Nimbus Dam, both north and south of the American River. However, the city’s boundaries are not coterminous with the city’s water service areas. San Juan WD provides wholesale water to the Ashland area, north of the river. San Juan WD also provides wholesale and retail water services to the American River Canyon area, which also lies north of the river. This water is diverted from Folsom Lake under San Juan WD’s water rights and treated at the Sydney N. Peterson WTP.

²⁶ Reclamation has determined that now, completion of a Final EIS is a lower priority than dealing with many other issues associated with overall operations of the CVP (EID, 2012).

²⁷ In 1964, Reclamation entered into a contract with El Dorado Hills County WD for a maximum amount of 37,600 acre-feet per year. This contract was assigned to El Dorado ID in 1973, and subsequently reduced to a fixed amount of 6,500 acre-feet per year in 1979. In 1983, the contract amount was increased to its present amount of 7,500 acre-feet.

The City of Folsom receives surface water diverted through Reclamation facilities at Folsom Lake into the Natoma Pipeline for water services areas south of the American River. The Natoma Pipeline splits into two separate lines: one line serves the Folsom Prison WTP, and one line serves the City of Folsom WTP. Raw water is also delivered to Aerojet for nonpotable use.

Appropriative Water Rights

The City of Folsom holds pre-1914 appropriative water rights for 22,000 acre-feet per year from the South Fork American River. An additional 5,000 acre-feet of water are available under a cotenancy agreement between the city and Golden State Water Company (WC). This water right was formally recognized in a settlement agreement with Reclamation and is delivered without reduction on a permanent basis (Folsom, 2011). Folsom State Prison has an appropriative water right for 4,000 acre-feet on the American River diverted from Folsom Lake (Reclamation, 2005).

Central Valley Project Water

In 1999, Reclamation signed a contract (6-07-20-W1372) with Sacramento County WA for the provision of CVP water as part of Section 206 of Public Law 101- 514. The contract dedicated 22,000 acre-feet of Fazio water to the agency. The City of Folsom was specifically named in the Reclamation contract as a subcontractor to gain benefit of a portion of the Fazio Water supply. In 2000, Sacramento County WA entered into a separate contract with the city to provide 7,000 acre-feet of the 22,000 acre-feet of Fazio Water. This water is subject to CVP allocation deficiencies (Folsom, 2011).

Groundwater

Historically, the City of Folsom has relied on groundwater to serve the area south of U.S. Highway 50. However, the city does not currently use groundwater, with the exception of private use by the Empire Ranch Gold Course, because of concerns about groundwater contamination. In 2007, the city signed an agreement with Aerojet for rights to treated groundwater produced by Aerojet's groundwater extraction and treatment facilities. This supply is not represented in CalSim 3.0.

Water Forum

The City of Folsom baseline surface water supply under the Water Forum Agreement MOU is 20,000 acre-feet. The surface water supply would increase to 34,000 acre-feet per year to reflect expected growth in demand. Under the city's PSA, the city would reduce its diversions from Folsom Lake in a three-stage stepped reduction known as "the Water Forum Wedge." Water deliveries in dry years would be reduced to 22,000 acre-feet. In the driest years (conference years) the city would reduce diversions to a maximum of 20,000 acre-feet. Further reductions of diversions would be made in the driest years to curtail diversions to 18,000 acre-feet by imposing extraordinary conservation measures throughout the city's service area.

City of Roseville

The City of Roseville is located in Placer County, west of the Cities of Rocklin and Granite Bay and north of Citrus Heights. The city serves water to most of its residents. A few small areas of the city bordering the service areas of Placer County WA, San Juan WD, and Citrus Heights WD are served by each respective water agency (Roseville, 2011). In CalSim 3.0, the City of Roseville service area is represented by demand unit 26N_PU1.

Surface water is delivered from Folsom Lake to the city's water treatment plant on Barton Road. Historically, groundwater has been used as a backup supply or during drought years when surface water supplies are scarce. However, the city has started to use its wells for aquifer storage and recovery (ASR) in a conjunctive use management strategy. Recycled water is available from Roseville's two wastewater treatment plants, Dry Creek Wastewater Treatment Plant (WWTP) and Pleasant Grove WWTP, and is used for landscape irrigation.

Roseville does not wholesale water to other agencies but does maintain 13 interties with 5 neighboring water utilities to provide, or receive, water for emergencies or special operating conditions (the agencies are Placer County WA, San Juan WD, California American WC, Citrus Heights WD, and Sacramento Suburban WD). The City of Roseville does not hold any water rights but has signed water contracts with Reclamation, Placer County WA, and San Juan WD for the delivery of surface water to its water treatment plant.

Central Valley Project Water

In 1967, the City of Roseville signed a contract (14-06-200-3474A) with Reclamation for up to 32,000 acre-feet per year of CVP water. The contract expired in 2010, but has been renewed on an interim basis.

Wholesale Agreements

The City of Roseville has signed a contract with Placer County WA providing for the delivery of 10,000 acre-feet per year of Middle Fork Project, with options for an additional 20,000 acre-feet per year. The City of Roseville also signed a wholesale contract with San Juan WD for 4,000 acre-feet per year. This water is derived from part of San Juan WD's contract with Placer County WA for 25,000 acre-feet of Middle Fork Project water.

Water Forum

Under the Water Forum Agreement, the City of Roseville has agreed to limit surface water diversions from Folsom Lake to 58,900 acre-feet per year, which is less than its full contract entitlement of 66,000 acre-feet. In drier years, the city has agreed to reduce its diversion in proportion to the unimpaired inflow to Folsom Lake to a minimum of 39,800 acre-feet per year. In the driest years, when supplies are limited, the city has agreed to work cooperatively with Placer County WA to provide up to 20,000 acre-feet of reoperation water to the American River (equal to the difference between 39,800 acre-feet and the 1995 baseline demand of 19,800 acre-feet).

San Juan Water District

San Juan WD is both a wholesale and retail water agency, providing water to urban areas north of the American River in northeastern Sacramento and southern Placer counties. Wholesale services are provided to a group of retail water agencies, which include Citrus Heights WD, Fair Oaks WD, Orange Vale WC, and part of the City of Folsom lying north of the river (Ashland service area). The San Juan WD retail service area is located adjacent and west of Folsom Lake. This retail service area and the Ashland wholesale area do not have groundwater supplies, and rely solely on surface water. The remaining wholesale customers use both surface water from the district and groundwater from their respective well systems as their supply sources (SJWD, 2011). San Juan WD receives water from Folsom Lake, which is treated at its Sidney N. Peterson

WTP. CalSim 3.0 represents the retail service area by demand unit 26N_PU2 and the wholesale area by demand unit 26N_PU3.

Appropriative Water Rights

San Juan WD holds pre-1914 water rights for 33,000 acre-feet per year of diversion from the American River. These rights were acquired as part of the purchase of the North Fork Ditch Company in 1954, and are recognized by Reclamation (contract DA-04-167-eng-610). The place of use for the water right water is the district's wholesale service area.

Central Valley Project Water

In 1962, San Juan WD acquired up to 40,000 acre-feet per year of CVP water to meet its future projected demands. Reclamation later reduced the contract amount from 40,000 acre-feet per year to 11,200 acre-feet per year based on Reclamation's demand projections for the district. San Juan WD unsuccessfully pursued Reclamation to reinstate the original 40,000 acre-feet amount. In 1999, as part of Public Law 101-514, San Juan WD signed an additional contract with Reclamation for up to 13,000 acre-feet per year. This water is commonly referred to as "Fazio" water. In 2006, Reclamation combined the two CVP contracts into a single contract (6-07-20-W1373) for delivery of up to 24,200 acre-feet per year through 2045.

Wholesale Agreements

In 1972, San Juan WD negotiated a contract with Placer County WA for an additional water supply from the agency's Middle Fork Project. This contract extends through 2021 and is renewable in 20-year periods. It provides for delivery of up to 25,000 acre-feet per year. Water is wheeled through Reclamation facilities under a Warren Act contract. The Placer County WA contract places a first priority on use in Placer County, but allows for surplus water to be used in Sacramento County. The district has an agreement with the City of Roseville to sell up to 4,000 acre-feet of this water during normal years if required by the City of Roseville.

Water Forum

As a signatory of the Water Forum Agreement MOU, San Juan WD intends to implement the supply restrictions designated in the agreement. Under the agreement, in normal years the district can divert its full 82,200 acre-feet per year (including 4,000 acre-feet for the City of Roseville). During drier years, the district must decrease diversion amounts from 82,200 acre-feet per year down to 54,200 acre-feet per year in proportion to the decreasing unimpaired inflow to Folsom Lake (the Water Forum "wedge"). In the driest years (conference years), the district has agreed to meet and confer with other signatories to develop a plan for water use. CalSim 3.0 does not currently represent these restrictions.

Sacramento Suburban Water District

Sacramento Suburban WD provides retail water services to four service areas within Sacramento County: the NSA, the Arbors at Antelope Service Area, McClellan Business Park Service Area, and the SSA. For CalSim 3.0 these services areas are aggregated into an NSA and SSA. The NSA includes the service area of the former Northridge WD. The SSA includes the Town and Country service area of the former Arcade WD.

Sacramento Suburban WD uses both surface water and groundwater as its supply sources. The district does not have any water rights, nor does it hold contracts with Reclamation for the delivery of CVP water. Entitlements for surface water are through water sales contracts with

other agencies. The NSA has been supplied limited surface water starting in 1991. Surface water use significantly expanded in 1998 with completion of the San Juan Cooperative Transmission Pipeline. Surface water supplies to the SSA began in 2007, following the expansion of the City of Sacramento's Fairbairn WTP.

Placer County WA Wholesale Agreement

In 2000, the former Northridge WD and Placer County WA signed an agreement for delivery of up to 29,000 acre-feet per year of the agency's Middle Fork Project water. The conditions of the contract were amended in 2008 to an annual entitlement of 12,000 acre-feet per year, and an additional 17,000 acre-feet supplemental amount, delivered with the approval of Placer County WA, for a maximum total of 29,000 acre-feet per year. Placer County WA has projected that its supply to the district would be reduced to 12,000 acre-feet per year in an average year type at buildout of the agency's service area, which is anticipated to occur after 2024 (PCWA, 2011). Starting in 2010, the supply became available only during Water Forum wet years, when the March-through-November unimpaired inflow into Folsom Lake is greater than 1,600,000 acre-feet. Delivery of this water also may be limited by available capacity at San Juan WD's Sidney N. Peterson WTP. Sacramento Suburban WD holds a Warren Act contract for wheeling Middle Fork Project water to the district.

City of Sacramento Wholesale Agreement

In January 2004, Sacramento Suburban WD signed an agreement with the City of Sacramento for up to 20 mgd (22,400 acre-feet) of surface water supply. Since 2007, the district has been receiving treated surface water from the City of Sacramento for use within the SSA (SSWD, 2011). American River water is treated at the city's Fairbairn WTP and delivered through the Howe Avenue transmission main. The district supply from the city is constrained by the Water Forum Agreement as well as Hodge Flows in the American River. Supplies from the city are reduced to zero when the unimpaired March-through-November inflow to Folsom Lake is below 950,000 acre-feet (Water Forum drier and driest years).

Water Forum Agreement

Under the Water Forum Agreement, surface water allocation from Placer County WA and the City of Sacramento to Sacramento Suburban WD will be reduced to zero in dry years.

California Department of Parks and Recreation

The State of California has a water right for up to 5,000 acre-feet on the American River diverted at Folsom Lake (Reclamation, 2005). The water is primarily used for irrigation and other needs at recreational facilities at and near Folsom Lake. CalSim 3.0 represents this demand by demand unit 26S_PU3.²⁸

Sacramento Municipal Utility District

SMUD started operating the Rancho Seco nuclear power station in southeastern Sacramento County in 1975. The initial water demand was estimated to be up to 75,000 acre-feet for cooling water, power plant operations, and landscape irrigation. Following the closure of the plant in 1989, up to 30,000 acre-feet continued to be delivered for plant maintenance, makeup water for

²⁸ This demand unit was incorrectly designated as a project ("_P") demand unit. This will be corrected in future revisions to CalSim 3.0.

on-site lakes, and landscape irrigation. SMUD recently constructed and put into operation a new natural-gas-fired power station at the Ranch Seco site that also uses cooling water diverted from the Folsom South Canal. In CalSim 3.0, SMUD's Rancho Seco facilities are represented by demand unit 60N_PU.²⁹

Central Valley Project Water

In 1970, SMUD was one of two CVP contractors to sign contracts with Reclamation to take delivery of water from the proposed Folsom South Canal. The contract (14-06-200-5198A) was for delivery by Reclamation of up to 60,000 acre-feet per year of CVP water for M&I use, and for delivery by Reclamation of an additional 15,000 acre-feet of SMUD water rights water associated with its Upper American River Project. Both CVP water and the water right water are diverted from the American River at Nimbus Dam and conveyed through the Folsom South Canal to the Rancho Seco site. The first 15,000 acre-feet of water delivered each year are designated water right water.

Under the terms of a three party agreement (SMUD, Sacramento County WA, and the City of Sacramento), the City of Sacramento provides surface water to SMUD for use at two of its cogeneration facilities located within the city's American River place of use. SMUD, in turn, has assigned 15,000 acre-feet per year of its Reclamation CVP contract water to Sacramento County WA for M&I use ("SMUD 1" assignment).

SMUD has made a second assignment of 15,000 acre-feet of CVP water to Sacramento County WA for M&I use ("SMUD 2" assignment). In return, Sacramento County WA is obligated to provide up to 15,000 acre-feet per year of groundwater to SMUD for use at its Rancho Seco facilities. The amount of water required by SMUD varies according to hydrologic conditions and the amount of cut-back imposed on its remaining CVP contract amount. Delivery of Sacramento County WA water will not be through the Folsom South Canal, although the agency has agreed to pay a portion of the canal costs as part of the financial arrangement for the assignment.

Water Forum

SMUD, as part of its Water Forum PSA, also supports a third assignment of 13,500 acre-feet per year of CVP contract water to south Sacramento agricultural interests. This assignment is pending the formation of a groundwater management entity that can represent the interests of surface water and groundwater users south of the Cosumnes River. An additional 1,500 acre-feet would be assigned to Rancho Murieta CSD.

Carmichael Water District

Carmichael WD serves the community of Carmichael, an unincorporated suburban area within northern Sacramento County. In CalSim 3.0, the district is represented by demand unit 26N_NU2. The district conjunctively manages surface water and groundwater to meet water demands within its service area. Groundwater typically provides between 15 and 30 percent of the total supply.

²⁹ In the past, SMUD has provided their non-project water rights water to Galt ID. However, the agreement between Galt ID and SMUD has expired and has not been renewed. Simulated demands for SMUD may be high as it is based on delivery data provided by Reclamation that includes sales to Galt ID.

Appropriative Water Rights

The district diverts surface water from the American River near Fair Oaks. This water is diverted through two licensed water rights and a water right permit. License 1387 provides for a year-round diversion of 15 CFS. License 8731 provides for a diversion of 10 CFS from May 1 through November 1. The two licenses are approximately equivalent to 14,500 acre-feet per year. Additionally, Carmichael WD holds Permit 7356 for diversion of 25 CFS year-round from the American River (CWD, 2011).

Water Forum

As a signatory to the Water Forum Agreement MOU, Carmichael WD may divert and use up to its licensed amount of surface water from the American River of 14,400 acre-feet in all year types. The Water Forum Agreement also provides that by 2030, Carmichael WD demand will be reduced to the historic baseline of 12,000 acre-feet per year by implementing urban water conservation best management practices (BMP). There is no diversion reduction requirement for Carmichael WD because 12,000 acre-feet per year is equivalent to its 1995 baseline diversion.

City of Sacramento

The City of Sacramento provides water supply to consumers within the city limits pursuant to Section 11 of the City Charter, which provides, in part, that “the supply of water for the City of Sacramento for municipal and domestic purposes shall always be owned and controlled as a municipal utility and shall be administered by the city government.” Sacramento also provides retail, wholesale, and wheeling services outside the city limits. Water supplies available to the city include surface water diversions from the lower American River to its Fairbairn WTP, diversions from the Sacramento River to its Sacramento WTP, and supplementary groundwater pumping. The combined surface water and groundwater supplies provide a highly reliable supply; the city does not receive any water supply derived from water entitlements of other water agencies.

The city’s surface water entitlements include five appropriative water right permits, pre-1914 rights, and a water rights settlement contract with Reclamation. These are discussed in the sections below.

Appropriative Water Rights – Sacramento River

The City of Sacramento has both pre- and post-1914 water rights. The city has diverted Sacramento River water since 1854 and claims a pre-1914 appropriative right to divert 75 CFS from the river. The city’s post-1914 water right permit (Permit 992) authorizes the city to take water from the Sacramento River by direct diversion, and has a priority date of March 30, 1920. Permit 992 authorizes the city to divert up to 81,800 acre-feet per year with a maximum flow of 225 CFS. The city’s current authorized place of use for water diverted under this permit includes all land within the city limits. This area changes over time through annexations.

Appropriative Water Rights – American River

The city holds four water right permits for diversions of American River water. Permits 11358 and 11361 authorize the city to divert water from the American River by direct diversion, at a maximum allowable combined rate of 675 CFS. The priority dates are October 29, 1947, and September 22, 1954, respectively. The place of use for both permits is 79,500 acres within and adjacent to the city, including portions of service areas of several other water purveyors. Permits

11359 and 11360 authorize diversion of water previously diverted by SMUD as part of the Upper American River Project (UARP). Permits 11359 and 11360 have priority dates of February 13, 1948, and July 29, 1948, respectively, and the place of use for both permits is lands within and to the east of the City of Sacramento. The maximum allowable combined diversion under these permits includes redirection of up to 1,510 CFS of UARP direct diversion water and up to 589,000 acre-feet per year of UARP stored water.

Reclamation Settlement Contract

Following protests by the City of Sacramento and Reclamation to each other's water rights applications, the two agencies signed an agreement in 1957, settling their differences. The city agreed to limit its combined rate of diversion under its American River water right permits to a maximum of 675 CFS. The city also undertook to limit diversions diversion under its Sacramento River water rights Permit 992 to a maximum flow rate of 225 CFS and a maximum amount of 81,800 acre-feet per year. In return, Reclamation undertook to make enough water available to enable the agreed-on diversions by the city. The settlement agreement is permanent and not subject to deficiencies.

Under the settlement agreement, annual diversions from the American River are capped at 154,000 acre-feet per year in 2005, increasing to 245,000 acre-feet per year by 2030. Additionally, the maximum combined annual diversion from the two rivers was capped at 326,800 acre-feet per year by 2030. The maximum annual diversions are presented in Table 14-12.

Table 14-12. City of Sacramento Maximum Annual Diversion Amounts

Year	Maximum Diversion from Sacramento River (acre-feet per year)	Maximum Diversion from American River (acre-feet per year)	Maximum Combined Diversion (acre-feet per year)
2005	81,800	154,000	205,000
2010	81,800	170,500	227,500
2015	81,800	189,000	252,000
2020	81,800	208,500	278,000
2025	81,800	228,000	304,000
2030	81,800	245,000	326,800

Source: Schedules A and B of the 1957 Water Rights Settlement Contract between U.S. Department of the Interior, Bureau of Reclamation, and the City of Sacramento

Water Forum Agreement and Lower American River Flow Standard

Reclamation operates Folsom Dam and Reservoir under State Water Board Decision 893 (D-893) that was adopted in 1958. The decision specifies fish protection requirements that allow flows at the mouth of the American River to fall as low as 250 cubic feet per second (CFS) from January through mid-September, with a minimum of 500 CFS required between September 15 and December 31 under all hydrologic conditions. The State Water Board, Reclamation, Water Forum, and other stakeholders agree that D-893 does not sufficiently protect the aquatic resources of the lower American River. During recent years, Reclamation has operated Folsom and Nimbus dams to provide flows in the lower American River typically well in excess of those required by D-893.

The Hodge Flow criteria were issued by Judge Richard Hodge in the *Environmental Defense Fund v. East Bay Municipal Utility District* litigation. The Water Forum parties agreed to use the Hodge Flow Criteria as a minimum flow that would preserve and protect the instream resources of the lower American River, pending development of long-term American River flow standards. The PSA negotiated by the City of Sacramento, as part of the Water Forum Agreement, restricts the city from using a portion of its Fairbairn water treatment capacity when American River flows are below the Hodge Flow criteria. The city may divert up to 310 CFS (200 mgd) at the Fairbairn WTP as long as the flow in the river is greater than the Hodge Flow criteria. Whenever the river flow is less than the Hodge Criteria Flow, diversions at this water treatment plant cannot be more than the maximum diversions shown in Table 14-13.³⁰

Table 14-13. Hodge Flow Criteria for Maximum Diversion at Fairbairn Intake

Maximum Diversion	River Flow and Time of Year						
	< 2,000 CFS	< 3,000 CFS		< 1,750 CFS			< 2,000 CFS
	01/01 – 02/28	03/01 – 05/31	06/01 – 06/30	07/01 – 08/31	09/01 – 09/30	10/01 – 10/14	10/15 – 12/31
Rate (mgd)	77.6	77.6	100.2	100.2	77.6	64.6	64.6
Rate (CFS)	120	120	155	155	120	100	100

Source: Water Forum Agreement, Section 5 and Appendix C, January 2000. Water Right Order amending Permit 11358, amended SWRCB, 2000.

Key:

CFS = cubic feet per second

mgd = million gallons per day

The City of Sacramento's PSA also limits the quantity of water diverted from the American River at its Fairbairn WTP intake under extremely dry years (i.e., conference years³¹) to 155 CFS and 50,000 acre-feet per year.

Wholesale and Wheeling Agreements

The City of Sacramento provides treated surface water to Sacramento Suburban WD, Fruitridge Vista WC, and the California American WC under various wholesale agreements. The city also wheels water to Sacramento County WA Zone 40, and wholesales/wheels water to the Sacramento International Airport and Metro Air Park. These wholesale agreements are described under sections for these water purveyors, and are summarized as follows:

- The wholesale agreement allows California American WC to receive a maximum annual delivery of 4,831 acre-feet. Water delivered to California American WC is a mixture of surface water and groundwater.
- Sacramento County WA Zone 40 obtains water diverted under Sacramento County's entitlements at the city's Sacramento River WTP and wheeled through the city system

³⁰ The terms of the city's PSA were negotiated based on a common understanding that existing American River flow standards were outdated and inadequate to preserve and protect the river's instream resources. The city's Water Forum Agreement PSA recognized the city's right to pursue revisions to the Hodge Flow limitations if it is demonstrated that modifying the limitations would not have significant adverse impacts on the public trust values of the American River below the Fairbairn WTP.

³¹ The PSA defines extremely dry years/conference years as years in which DWR projects an annual unimpaired flow into Folsom Lake of 550,000 acre-feet per year or less, or when the projected March-through-November unimpaired flow into Folsom Lake is less than 400,000 acre-feet per year.

from a connection along Franklin Boulevard. The agreement between Zone 40 and the city allows Zone 40 to receive a maximum annual delivery of 12,350 acre-feet.

- Sacramento International Airport and Metro Air Park receive a maximum annual delivery of 1,420 acre-feet and 233 acre-feet, respectively. Fruitridge Vista WC receives a maximum annual delivery of 300 acre-feet.
- Supplies to Sacramento Suburban WD consist of up to 20 mgd of firm supply and up to an additional 10 mgd, when available. Deliveries are restricted to periods when flow conditions in the lower American River do not constrain diversion at the Fairbairn WTP intake; no water is delivered when river flows fall below the Hodge flow criteria.

In the future, the city may expand its role as a wholesaler/wheeler for the benefit of other water purveyors and their customers in the region.

California American Water Company

California American WC provides retail water services to eight service areas within Sacramento County and one service area within Placer County. Seven of these service areas are represented explicitly in CalSim 3.0; the other two service areas are located within the Delta. The seven service areas, with the CalSim 3.0 demand units in which they are located shown in parentheses, are as follows:

- Antelope service area (26N_NU1)
- Arden service area (26N_NU4)
- Lincoln Oaks service area (26N_NU1)
- Parkway service area (26S_NU2)
- Security Park service area (26S_PU6)
- Suburban Rosemont service area (26S_NU2)
- West Placer service area (24_NU2)

The grouping of California American WC's service areas into WBAs accounts for the service area locations north or south of the American River, and whether the service areas are located within the City of Sacramento's American River place of use. For CalSim 3.0, California American WC's West Placer service area is combined with Placer County WA's Zone 1. The West Placer service area is not discussed further in this section.

California American WC does not have direct access to surface water; water supplies consist primarily of groundwater, with additional, but limited surface water provided under various wholesale agreements. California American WC has signed water supply agreements with the City of Sacramento and Sacramento Suburban WD and plans to purchase water from Sacramento County WA (Zone 40). These wholesale agreements are discussed in the following sections.

City of Sacramento Wholesale Agreement

The service areas of Arden, Parkway, and Suburban-Rosemont lie within the place of use of the City of Sacramento American River water rights. In 1997, the predecessor to California American WC and the City of Sacramento entered into an agreement by which the city would divert, treat, and sell surface water to California American WC for use within the Parkway service area. The agreement was amended in 2010 to allow California American WC to receive a maximum of 3.46 mgd non-firm capacity during off-peak periods (October 15 through May 14), and an additional 2.3 mgd firm capacity, for a total maximum delivery rate of 5.76 mgd using firm and non-firm capacity. The City's water would not be available until new facilities are in place.

Sacramento Suburban WD Wholesale Agreements

Sacramento Suburban WD has signed a water sale agreement with Placer County WA for 29,000 acre-feet per year of Middle Fork Project water. The place of use under the agreement includes parts of California American WC's Antelope and Lincoln Oaks service areas. In 2005, California American WC signed a wholesale water supply agreement with Sacramento Suburban WD that allows the district to sell surface water, surplus to its needs, to California American WC. For CalSim 3.0, the Antelope and Lincoln service areas are combined with Sacramento Suburban WD into a single demand unit. Wholesale agreements between these two agencies are not modeled. Rather the entire demand unit has access to Middle Fork Project water made available through Placer County WA's contracts with Sacramento Suburban WD.

Sacramento County WA Wholesale Agreement

California American WC plans to purchase water from Sacramento County WA as the primary source of supply for the Security Park service area.

Golden State Water Company – Cordova

Golden State WC's Cordova service area is located adjacent to the American River and Folsom South Canal and serves the City of Rancho Cordova and the unincorporated community of Gold River.³² In CalSim 3.0, the service area is represented by demand unit 26S_PU2. Golden State WC conjunctively uses surface water and groundwater. American River water diverted from the Folsom South Canal is treated at the company's Coloma and Pyrites WTPs, which have a combined treatment capacity of approximately 14.4 mgd (16,100 acre-feet per year). Surface water supplies are supplemented by groundwater pumped at seven production wells with a combined capacity of approximately 18.5 mgd (20,700 acre-feet per year) (GSWC, 2011).

Water Right

Golden State WC has a pre-1914 appropriative water right to divert up to 10,000 acre-feet per year from the American River. The maximum diversion rate is 20 CFS. The point of diversion has been amended to allow diversion from the Folsom South Canal. In 1994, Golden State WC entered into an *Agreement for Reallocation of Water under Co-Tenancy Agreement* with the City of Folsom to lease 5,000 acre-feet per year of water rights in perpetuity. The water company retained 5,000 acre-feet of its water right for use within the Cordova System (GSWC, 2011).

³² Water services for this area were formerly provided by American States Water Company.

SMUD Transfer

Golden State WC signed a temporary water transfer agreement with SMUD to divert up to 6,000 acre-feet per year from the Folsom South Canal. The contract term was for 5 years, from 2008 through 2012 and was provided from SMUD's CVP contract entitlement (14-06-200-5198A). This water supply is no longer available.

Aerojet Replacement Water

Gencorp/Aerojet Corporation (Aerojet) past manufacturing, testing and disposal methods have resulted in groundwater contamination in the Rancho Cordova area. Following litigation over the loss of high quality groundwater, Aerojet signed a 2004 settlement agreement to supply Golden State WC with 5,000 acre-feet of replacement water to offset contaminated groundwater and to supply an additional 10,200 acre-feet per year of contingent replacement water, if necessary, to satisfy system demands. Aerojet will deliver the first 5,000 acre-feet of replacement water by discharging treated groundwater into the American River, which will subsequently be delivered to Golden State WC through Carmichael WD facilities (GSWC, 2016). This water source is currently not represented in CalSim 3.0.

Other Water Agencies

Del Paso Manor WD and Golden State WC – Arden are located within Area “D” of the City of Sacramento's American River place of use. These purveyors may buy surface water in the future, but currently depend on groundwater. CalSim 3.0 does not simulate future possible surface water wholesale agreements. Rio Linda Elverta Community WD relies exclusively on groundwater. Future possible wholesale agreements that would allow the district to use surface water are not represented in CalSim 3.0.

CalSim 3.0 Representation

CalSim 3.0 modeling assumptions relating to diversions of American River water at the Auburn Dam site, Folsom Lake, Folsom South Canal, lower American River, and lower Sacramento River are summarized in Table 14-14.³³

³³ Before the passage of the CVPIA, Reclamation entered into temporary short-term contracts with Clay WD and Omochumne-Hartnell WD for delivery of CVP water from the Folsom South Canal. However, one of the provisions of CVPIA was that Reclamation can no longer enter into CVP water service contracts with entities that were not existing long-term CVP contractors before the passing of CVPIA with the exception of temporary 215/surplus flows contracts. Reclamation generally makes 215/surplus water available when water is released from Lake Folsom for flood control purposes. 215/surplus is usually available for a short period of time, typically no more than a few weeks and amounts are generally small. These deliveries are not represented in CalSim 3.0.

Table 14-14. Modeling Assumptions for Lower American and Sacramento Rivers

Water Purveyor	Point of Diversion	CalSim 3.0 Node	Existing Condition		
			CVP Contract	Water Rights	Diversion Limit
			Maximum Annual Amount ¹ (acre-feet/year)		
American River Diversions					
Placer County WA	Auburn Dam Site	NFA016		35,500	35,500
Sacramento Suburban WD - NSA (formerly Northridge WD) ²	Folsom Lake	FOLSM		0 - 29,000	0 - 29,000
City of Folsom (includes Public Law 101-514)			7,000	27,000	34,000
Folsom Prison				4,000	4,000
San Juan WD - Placer County				21,000	21,000
San Juan WD – Sacramento County (includes Public Law 101-514)			24,200	33,000	57,200
El Dorado ID ⁷			7,550	17,000	7,550
City of Roseville			32,000	14,000	46,000
California Parks and Recreation				5,000	5,000
Golden State WC (formerly Southern California WC and Arden Cordova WC)	Folsom South Canal	FSC003		5,000	5,000
Sacramento Municipal Utility District (SMUD)		FSC025	30,000	15,000	45,000
City of Sacramento ³	Lower American River	AMR007		170,500	170,500
Sacramento Suburban WD - SSA (formerly Arcade WD)		AMR007		0	0
Carmichael WD		AMR017		14,400	12,000
Sacramento River Diversions					
City of Sacramento ³	Sacramento River Pump Station	SAC062		81,800	81,800
Sacramento County WA ⁴ (includes part of Public Law 101-514)			10,000	0	10,000
Sacramento County WA (includes SMUD 1 and SMUD 2 transfer and remaining Public Law 101-514) ⁵	Freeport Regional Water Project	SAC050	35,000	0 - 71,000	N/A
East Bay Municipal Utility District ⁶			55,000		55,000

Notes:

¹ When the CVP contract quantity exceeds the quantity of the diversion limit less the water right (if any), the diversion modeled is the quantity allocated to the CVP contract (based on the product of the CVP contract quantity and CVP M&I allocation) plus the water right (if any), but with the sum limited to the quantity of the diversion limit.

² Diversion is only allowed if, and when, the March-through-November Folsom Unimpaired Inflow (FUI) exceeds 1,600,000 acre-feet.

³ When the Hodge single dry year criteria is triggered, or the March-through-November Folsom Unimpaired Inflow falls below 400,000 acre-feet, diversion on the American River is limited to 50,000 acre-feet and diversion on the Sacramento River is increased up to the physical capacity of Sacramento River Pumping Plant. Conference years occur twice in the period of simulation, in 1924 and 1977.

⁴ Sacramento County WA currently uses Fazio water to supply the South Service Area (SSA) of Zone 40. Water is treated at the City of Sacramento's water treatment plant, wheeled through the City's distribution system, and delivered through the Franklin Intertie. The capacity of the Franklin Intertie is 11 MGD, equivalent to 12,320 acre-feet per year. The remaining portion of the Fazio water and the SMUD 1 and SMUD 2 assignments are available for diversion at the Freeport Regional Water Authority intake to be treated at the Vineyard water treatment plant.

⁵ Diversion under Sacramento County WA water right is restricted to periods of Delta excess conditions..

⁶ East Bay Municipal Utility District CVP diversions are governed by the Amendatory Contract, stipulating the following: 133,000 acre-feet maximum diversion in any given year; 165,000 acre-feet maximum diversion amount over any 3-year period; diversions allowed only when East Bay Municipal Utility District total storage drops below 500,000 acre-feet; and 155 CFS maximum diversion rate.

⁷ Rediversion of Weber Creek, Slab Creek, and Hangtown Creek water by El Dorado ID at Folsom Lake is not represented in CalSim 3.0.

Key:

CVP = Central Valley Project, Delta = Sacramento-San Joaquin Delta, ID = Irrigation District, M&I = municipal and industrial
NSA = North Service Area, SSA = South Service Area, SMUD = Sacramento Municipal Utilities District, WA = Water Agency
WC = Water Company, WD = Water District

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